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DRAFT/AMENDED WORK PLAN FOR STABILIZATION OF HAZARDOUS WASTE IN GRANITE CITY, MADISON, AND VENICE, ILLINOIS, ASSOCIATED WITH NL INDUSTRIES/TARACORP SUPERFUND SITE

CONTRACT NO. DACW45-89-D0506
DELIVERY ORDER NO. 17

Submitted to:

United States Army Corps of Engineers
Omaha, Nebraska

Submitted by:

OHM Remediation Services Corp.
a subsidiary of

OHM Corporation

March 16, 1995
Project 16473

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Submitted to:

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Prepared by:

OHM Remediation Services Corp.
Midwest Region

Approved by:

Lawrence J. Hoffman
Project Manager
Midwest Region

March 16, 1995
Project 16473.0

TABLE OF CONTENTS

1.0 INTRODUCTION

The United States Army Corps of Engineers (USACE) has tasked OHM Remediation Services Corp. (OHM), a wholly owned subsidiary of OHM Corporation, under the Preplaced Contract No. DACW45-89-D0506, Delivery Order No. 17, to perform removal of hard rubber battery case material and lead-contaminated soil at various locations associated with the NL Industries/Taracorp Superfund Site (NL Site) in Granite City, Madison, and Venice, Illinois.

This draft amended work plan (WP) is intended to detail the methods which will be employed to perform the work. This WP includes a discussion of the scope of work in Section 2.0 and OHM's technical approach in Section 3.0. Section 4.0 discusses OHM's subcontractor management plan. OHM's project team and organization are presented in Section 5.0. The Chemical Data Acquisition Plan (CDAP) is included as Appendix A, and the Addendum to the Site-Specific Health-and-Safety Plan (SSHP) and the Air Sampling Plan are included as Appendix B.

1.1 SITE HISTORY

The NL Site includes the NL Industries/Taracorp Plant, a former secondary lead smelting operation located at 16th Street and Cleveland Boulevard in Granite City, Illinois. Prior to 1903, the plant included various smelting related equipment and processes. From 1903 to 1983, secondary lead smelting occurred on site. These activities were discontinued during 1983 and the equipment dismantled.

In July 1981, St. Louis Lead Recyclers, Inc. (SLLR) began using equipment on adjacent property owned by Trust 454 to separate components of the Taracorp waste pile. The objective was to recycle lead bearing materials to the furnaces at Taracorp and send hard rubber off site for recycling. SLLR continued operations until March 1983 when it shut down its equipment. Residuals from the operation remain on Trust 454 property as does some equipment.

A State Implementation Plan for Granite City, Illinois, was published in September 1983 by the Illinois Environmental Protection Agency (IEPA). The IEPA's report indicated that the lead nonattainment problem for air emissions in Granite City, Illinois, was in a large part due to emissions associated with the operation of the secondary lead smelter operated by Taracorp and lead reclamation activities conducted by SLLR. The IEPA procured Administrative Orders by Consent with Taracorp, SLLR, Stackorp, Inc., Tri-City Truck Plaza, Inc., and Trust 454 during March 1984. The orders required the implementation of remedial activities relative to air quality.

NL Industries, as former owner of the location, voluntarily entered into an Agreement and Administrative Order by Consent with the United States Environmental Protection Agency (USEPA) and IEPA in May 1985 to implement a Remedial Investigation/Feasibility Study (RI/FS) for the location and other potentially affected areas. Taracorp was not a party to the agreement due to the fact that it filed for bankruptcy. The USEPA determined that the location

was a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) facility, and it was placed on the National Priorities List on June 10, 1986.

1.2 DESCRIPTION

This action requires the excavation, treatment, and disposal of fill material placed in alleys, parking lots, driveways, and yards in residential communities. The communities include Granite City, Madison, and Venice, Illinois. The Record of Decision (ROD) established the action levels for this project at 500 parts per million (ppm) of lead for residential areas and visibly clean for driveways, alleys, etc. Following the removal of the contaminated material, the impacted areas will be restored. This restoration will include sodding the yards and placing rock on or paving the alleys, driveways, and parking lots.

1.3 PROJECT OBJECTIVES

The objectives of this field effort are to excavate lead-contaminated soil and battery chips and confirm that all contaminated soils have been removed to the action level of 500 ppm. The hazardous wastes removed from each site will be transported to the Trust 454 site for stabilization. The hazardous waste definition from the ROD is visible battery chips. The stabilized waste will be treated sufficiently to characterize the wastes as nonhazardous wastes. Proper and sufficient sampling and analysis will be performed on the stabilized wastes to confirm their nonhazardous waste characterization. The nonhazardous waste will then be transported to a RCRA Subtitle D landfill. Nonhazardous wastes excavated from the site, which do not require stabilization, will be transported directly to a RCRA Subtitle D landfill.

2.0 SCOPE OF WORK

This section has been prepared based upon the scope of work contingency delineated by the document provided to OHM by USACE entitled:

SCOPE OF WORK FOR
CONTRACT NO. DACW45-89-D0506
STACK EMISSIONS (LEAD) REMOVAL
GRANITE CITY (MADISON COUNTY), ILLINOIS
DELIVERY ORDER NO. 17
JUNE 23, 1994
FINAL REVISED

The scope of work in general encompasses the following tasks:

- Work plan development
- Site visit
- Site administration
- Mobilization/demobilization
- Site preparation and teardown including the setup and teardown of decontamination facilities, support equipment trailers, clearing and grubbing of brush, paving, and landscaping
- Excavation and testing of contaminated soils and restoration of contaminated areas
- Testing of soils from cleanup locations to verify that the 500 ppm lead cleanup level has been met
- Treatment of soil materials with Portland cement to fix/immobilize the lead present in it
- Testing of fixed soils to verify fixation process
- Storage of nonhazardous wastes for classification and authorization for disposal as an IEPA special waste

- Transportation and disposal of hazardous, nonhazardous, and special wastes
- Final project report

2.1 WORK PLAN DEVELOPMENT

The project work plan describes how the work will be performed according to the scope of work as delineated by USACE and environmental, industrial standard, and health-and-safety requirements.

The work plan also consists of a CDAP, included as Appendix A. An addendum to the SSHP and Air Sampling Plan are included as Appendix B.

OHM discusses the relevance and application of the Illinois Environmental Protection Agency's RCRA Part B Permit Application Decision Guide in Appendix C.

2.2 SITE ADMINISTRATION/LOGISTICAL SUPPORT

Prior to full-scale mobilization to the location, logistical preparation activities will be performed. These activities are expected to include:

- Conduct preconstruction meeting
- Arrange for waste hauling licenses
- Meet with property owners
- Locate utilities at each property
- Establish transportation routes between each property and to the NL Industries/Trust 454 site
- Coordinate with local agencies and hospital

The project site administration will be centrally established at the former USACE maintenance facility. Site administrative activities performed from this location will include:

- Site supervision
- Cost tracking/reporting
- Health and safety administration
- Waste tracking/documentation
- Field sampling/analytical support
- Field purchasing/subcontract management
- Logistical support

2.3 MOBILIZATION/DEMOBILIZATION

This task involves the actual transportation of personnel, equipment, materials, and other resources to and from the project site. A majority of the personnel and equipment will be mobilized at the beginning of the project and demobilized at the end of the project. This is especially true for the supervisory/administrative personnel and the support equipment such as vehicles and decontamination/office trailers. Most personnel and equipment will be mobilized from OHM's St. Louis, Missouri, Division. Subcontractor mobilization and demobilization will be managed by the OHM project manager in close conjunction with site supervisor and USACE identified site-specific needs. OHM anticipates mobilization of three excavation crews for removal and stockpiling hazardous materials. A fourth crew will set up the stabilization process.

All necessary permits and licenses will be secured before site mobilization. The most crucial permit issued for the stabilization project is permission to proceed by IEPA. The IEPA has sent a letter of approval to place hazardous materials on the stabilization pad approved by IEPA previously. The transporter companies and disposal facilities will be USEPA licensed operations. Also, prior to mobilization, all on-site employees will have completed Occupational Safety and Health Administration (OSHA) 40-hour hazardous materials training.

2.4 SITE PREPARATION AND TEARDOWN - ALLEY/LOT EXCAVATION

The command post/project on-site office and equipment staging area will remain at the former USACE maintenance facility. The USACE-owned location has been chosen for its security, accessibility, and storage area attributes. The area will be fenced, including a locking gate. This area is in a location accessible to all of the work areas and has sufficient office and equipment storage space.

Alley/lot excavation equipment will be left on the excavation site, and a security service will observe the off hours. While loading materials for disposal or stockpiling, the tires of the trucks may come in contact with contaminated material. When this occurs a portable decontamination pad will be utilized. It will be set up at the exit point, and the tires will be sprayed off with a high-pressure water laser as the vehicle exits the site. The decontamination rinsate will be collected and will be applied to contaminated soil as it is loaded into containers as a dust control measure.

At the conclusion of the project, all equipment used on the site will be decontaminated before demobilization. Portable decontamination pads will again be used. Gross contamination will be scraped from the machines prior to being washed with a high-pressure water laser. The decontamination rinsewater will be collected and will be applied to the last loads of contaminated soil as a dust control measure.

2.5 EXCAVATION OF CONTAMINATED SOILS AND RESTORATION OF SITES

The scope of work for this project is shown at Figure 2.1

FIGURE 2.1

SCOPE OF WORK
PROVIDED TO OHM BY USACE

The contractor shall be required to provide all plant, labor and material, and perform all work necessary to treat and stabilize lead (RCRA) contaminated soil and battery chips and other debris. It is estimated that the amount of contaminated soil is between 3,000 to 5,000 tons.

The site for processing shall be furnished to the contractor rent free, water and electricity are accessible at site. Hook up, metering and payment for utilities shall be the responsibility of successful subcontractor. The contractor shall obtain all necessary permit for his operations and material shall be processed within the time frame required by Haz waste regulation.

Samples shall be provided for bench test, which will be performed on the soil to determine what process will be necessary to stabilize the lead to meet RCRA Disposal Requirements for Special Waste.

The soil shall be delivered to the staging area and stockpiled by others. The successful contractor will perform tests, treat and stabilize the soil from the stockpile, and document tests necessary to certify shipment according to DOT and OSHA regulations. Perimeter air monitoring will be performed by the prime contractor for dust control efforts.

The subcontractor will have to cooperate with the prime contractor on off-loading and loading of stockpiles in the immediate area.

The analytical report of the soils will be furnished to the subcontractor before receipt of material.

22, October 93
Rev. 5

The excavation techniques employed at each location will vary according to location accessibility and the depth and extent of material to be removed. Minimization of disturbances to adjoining properties/areas will also be a key consideration in performing each excavation. OHM anticipates using tracked excavators, backhoes, Bobcats, and manual removal methods.

Dust control will be a major effect. A hydro meter and hose will be available at all times to prevent fugitive emissions. Water from decontamination sources will be recycled this way.

OHM's schedule for excavation has been developed to facilitate logistics management and limit the time required to transport equipment and crews from location to location. During excavation activities, engineering controls and security measures such as surrounding the exclusion zones with fluorescent orange PVC barrier fencing will be employed to prevent cross contamination and unauthorized entry to exclusion zones.

After receiving analytical result(s) that confirm the cleanup criteria of 500 ppm has been achieved, OHM will restore the locations to preremedial conditions. Excavations will be backfilled with clean soils and paving completed as required by the Scope of Work. Fencing and other structures removed during remediation will be replaced and sodding, seeding, and revegetation performed where necessary.

OHM will utilize a local fill source chosen for the quality of fill and price. OHM will collect one sample of the backfill source to be used for the restoration activities. Additional backfill samples may be necessary if the soil composition/appearance changes noticeably. The anticipated analyses for the backfill sample include volatile and semivolatile organics, pesticides, and RCRA metals.

2.6 TESTING OF SOILS FROM CLEANUP LOCATIONS

At the residential areas, OHM will screen samples on site to quickly determine the levels of lead using XRF technology. The XRF screening will be performed to assist in removal of all material in the residential areas above 500 ppm lead. Sampling locations will be selected in the excavation area from 25-foot grids.

A minimum of three verification samples from each excavation at the residential locations will be sent to an off-site laboratory for analysis. The CDAP has the explicit formula for determining the number of samples and the estimated number of samples per location. The areas will be backfilled and restored after verification sampling.

2.7 TREATMENT OF SOIL MATERIALS WITH PORTLAND CEMENT

2.7.1 Introduction

Stabilization is a chemical/physical process which immobilizes hazardous constituents enabling the treated waste to meet or exceed federal and state standards prior to land disposal.

The basic components of the stabilization process include:

- Powerscreen
- Crusher
- Waste Receiving Hopper
- Reagent Storage Silo
- Pugmill
- Belt Conveyors
- Various equipment and controls to operate the facility

See Figure 2.2 for an overview of the stabilization process.

2.7.2 Performance Criteria

The stabilized material will meet the applicable "treatment standards" specified in 40 CFR 268.41 which is 5 milligrams per liter (mg/l) for D008. In order to meet the aforementioned criteria, OHM proposes to implement the treatment process described in the following sections. OHM will perform one full TCLP analysis on a representative waste sample to verify lead is the only constituent to fail prior to treatment operations.

2.7.3 Site Layout

The proposed location for the process equipment is shown on Figure 2.3, Site Map. The stabilization equipment requires no special structural foundations such that location in Seismic Zone No. 1 would be any special concern. The site is also outside the 500-year Flood Plain as exhibited in 1993. There are no adjacent properties or structures located within 100 feet of the proposed location. Trucks will be received a on circular road from State Street for receiving and shipping wastes.

The site will have haul roads designated for hauling hazardous waste and the processed waste on the containment pad. The receiving and shipping roadway will be repaired with gravel where too soft for truck traffic and covered with a geotech fabric to prevent decontamination of truck tires. Existing conditions indicate an entire area covered with slag previously for the employee parking lot and will withstand truck traffic. Any gravel used for repairs will be minimized and will remain on site. Trucks will be manifested as approved by IEPA and will enter from the State Street fence gate. OHM anticipates receiving eight dump trucks (230 tons) per day and foresees no traffic congestion. The processed waste will be hauled by a rubber-tired front-end loader to stockpiles awaiting shipment after passing TCLP analysis. Landfill haul trucks will have a clean dedicated haul road to ship approved processed waste. OHM expects to ship 20 trucks (400 tons) to the landfill per 8-hour day. No special traffic control will be required.

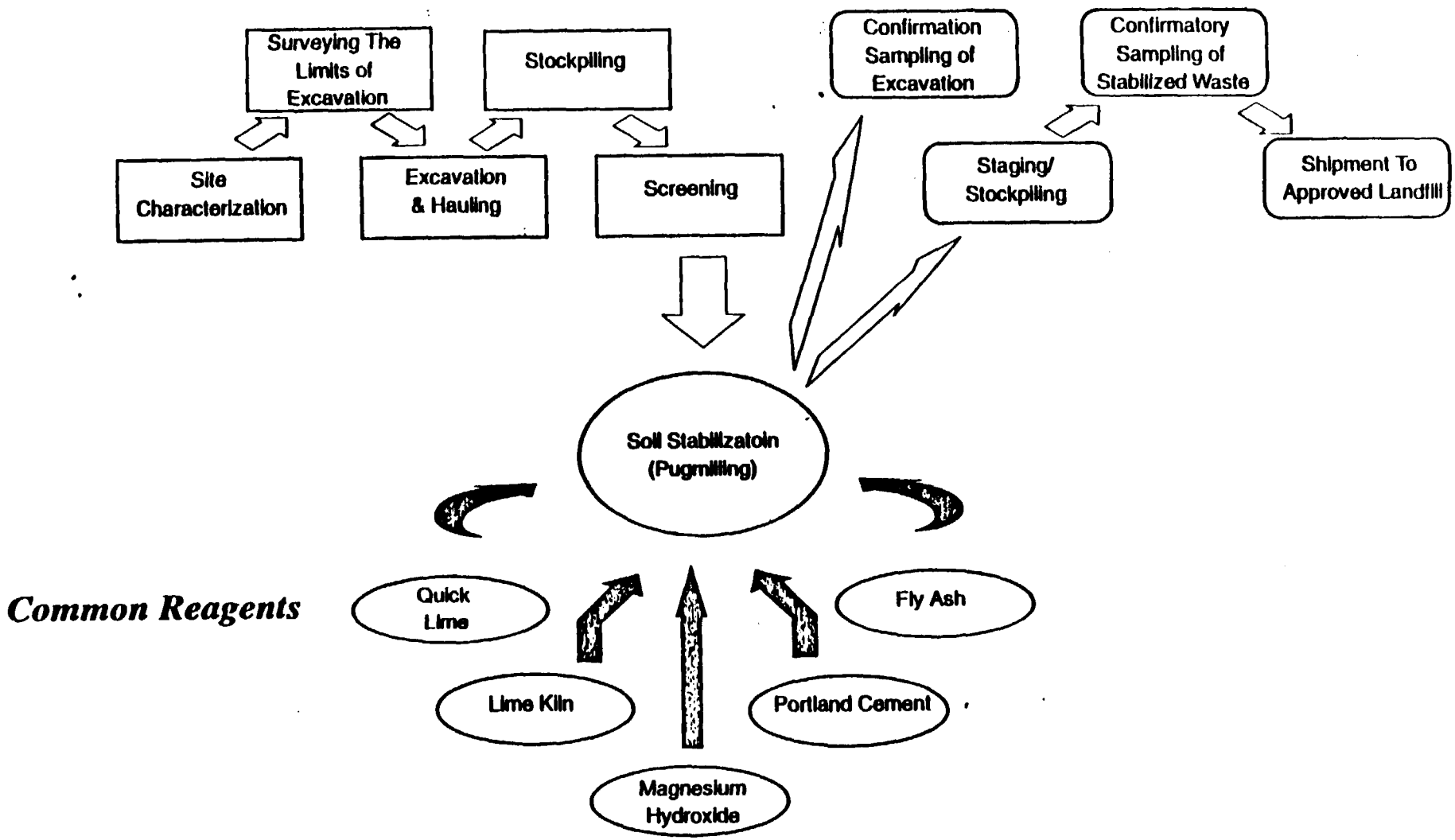
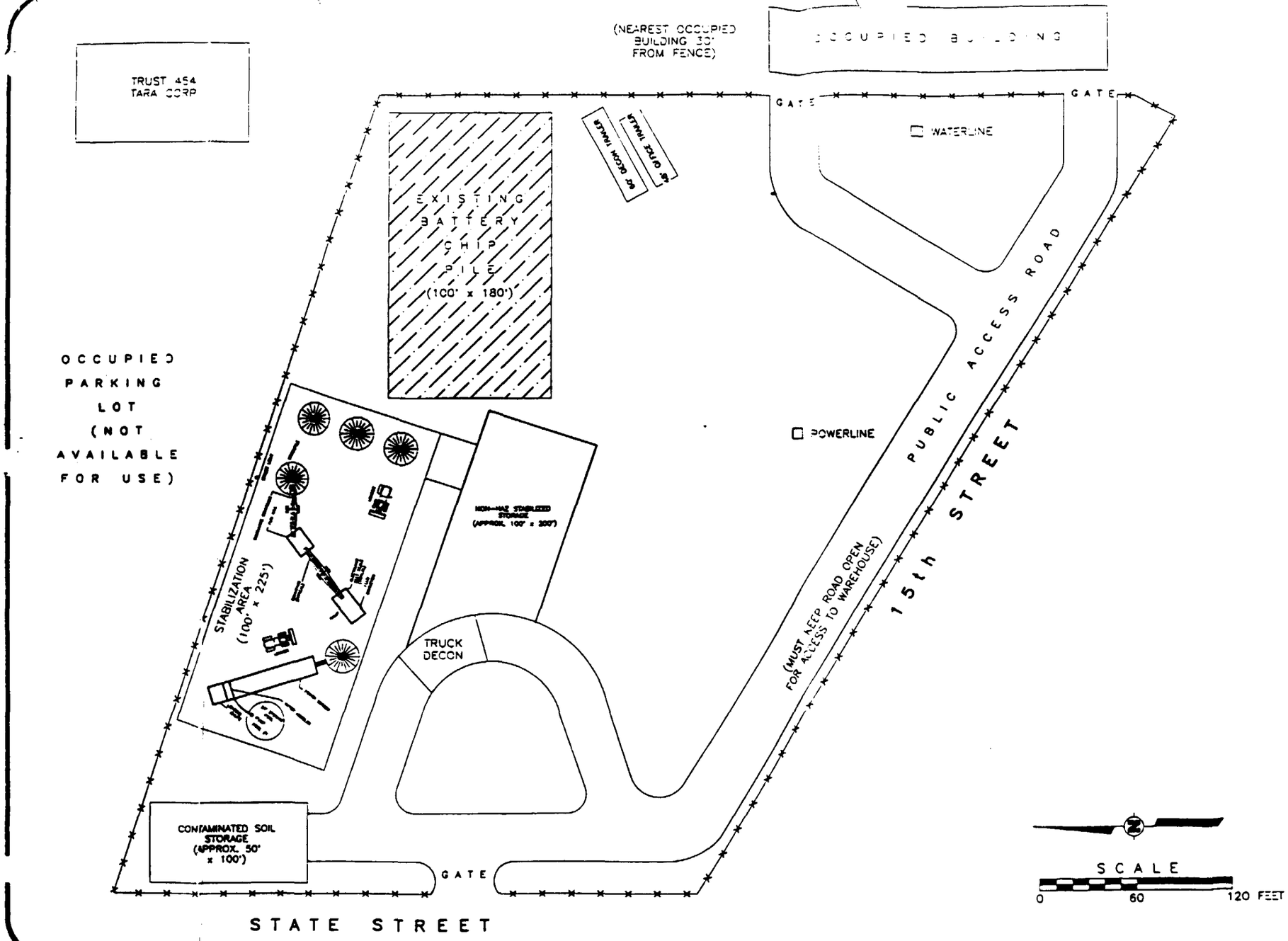


FIGURE 2.2

STABILIZATION METHODOLOGY



General Notes:

No.	Revision / Issue	Date

FIGURE 2.3
SITE MAP

GRANITE CITY
GRANITE CITY, ILLINOIS

OHM Corporation
Findlay, Ohio

Drawn By: L. JUHGS	Checked By:
Date: 11-25-99	Approved By:
Scale: AS SHOWN	Drawing No: 15407-07

A temporary waste storage area will be provided to store hazardous battery casings/soil. The floor will be protected with an HDPE liner beneath 6 inches of compacted CA-6 stone and a top cover of 4 inches of asphalt to prevent further migration of lead into existing contaminated soils. Design for this containment system is in Appendix F. The HDPE and CA-6 stone will be disposed at the end of the project. A berm will be built around the temporary storage area to control run-on and run-off in the storage area. This containment will be sloped to a sump to collect run-off. The run-off water will be pumped as needed to the water holding tank for the pugmill process.

The stabilization area will also be protected by an HDPE liner/CA-6 stone/asphalt to prevent further soil contamination. A berm will be built around the perimeter of the stabilization area to prevent run-on and run-off. The area will be sloped to a sump to collect run-on and run-off. Any water buildup in the stabilization area will be pumped into the holding tank for reagent mixing. The nonhazardous storage area will be constructed with the same materials and slope.

All mobile equipment will have fire extinguishers mounted in the operator's cab. Dry chemical fire extinguishers will be placed around the pugmill and conveyor. Access to a fire hydrant is available on the property.

2.7.4 Equipment Specifications

The process system consists of the following components and major accessory equipment:

- One powerscreen - Mark III
- One 8-cubic yard feeder belt with hydraulic controlled conveyors
- One 24-inch by 30-foot conveyor with belt scraper and belt scales
- One pugmill with twin shafts, twin drives with increased horsepower for shaft speeds of 90 rpm, contour liner, hinged cover, inlet and outlet chutes with an adjustable slide gate, support structure with stairways and catwalks, water spray bars, water pump, and meter
- One 300-barrel steel reagent silo with positive feed drives, solids flow meter, and top-mounted baghouse
- One 24-inch by 40-foot discharge conveyor with support structure, belt scraper, and belt scales
- One skid-mounted control house with power supply, AC inverters, electrical switch gear, control console with manual controls, and ratio control package

Information on the equipment can be found in Appendix D including the pugmill design standard. Process equipment can be viewed in Figure 2.4

2.7.5 Process Description

Overview

OHM's stabilization system will consist of a variety of feeders, conveyors, silos, and a pugmill mixer integrated into a complete system for the continuous mixing of wastes and reagents. The contaminated soil will be fed to a live bottom feeder and then by conveyor into the pugmill for blending with the stabilization additive. As the untreated material enters the pugmill, it will pass over a weigh belt unit to record the tonnage of the material to be treated. The weigh belt provides a continuous record of the performance of the stabilization system. The stabilization additive material will be introduced from the silo feeder which attaches to the pugmill. The silo feed rate is correlated with the weight belt reading to ensure the appropriate ratio of stabilization additive is delivered to the pugmill in a consistent manner. The treated material will be conveyed to a storage area for verification testing. Following confirmation that the treatment requirements have been met, the stabilized material will then be loaded for disposal off site. A process flow can be viewed in Figure 2.5.

Soil and Debris Grinding

The pugmill anticipated for use in remediation is limited to accepting materials, when measured along the longest axis, of less than 2 inches. As a result, large soil and debris material must be removed and size-reduced prior to stabilization. A powerscreen will be utilized for material separation and classification. This unit is equipped with a grizzly and shredder system. The hopper discharges to a 48-inch wide by 36-foot long conveyor to a double deck screen. The material passing through the screen will be stockpiled for further processing.

Oversized material will be stockpiled until sufficient volume justifies mobilization of a grinder. The oversized material will be run through the grinder and reduced to less than 2 inches. The material will then be added to the feed system for stabilization. Fugitive dust will be controlled by hand water spraying when visible.

Material Feeding

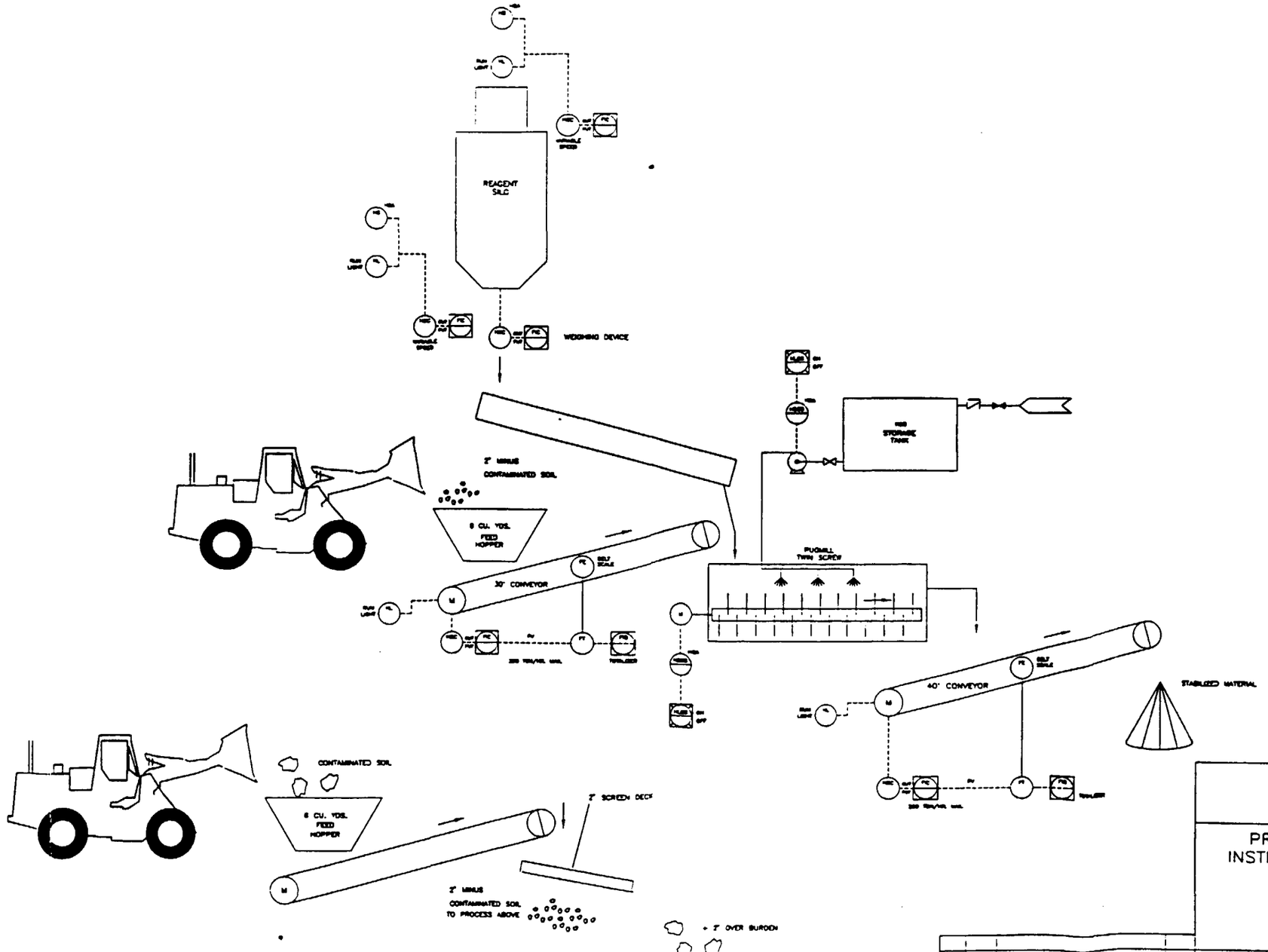
The size-reduced and screened soil and debris would be fed from stockpiles into a live bottom feeder and then by conveyor to the pugmill. A front-end loader or trackhoe will load the screened material into the hopper. The feed rate of material placed in the feed hopper is controlled by the operator. The operator adjusts the feed gates to the proper opening setting, based on various calibration data. The feed rate can be adjusted from 0 tons per hour at the closed position to 80 tons per hour at the maximum, open position. Precise feed rates would be maintained by the operator.

The contaminated soil will be conveyed to the pugmill and passed over a weigh belt unit to record the tonnage of material to be treated. The weigh belt provides a continuous record of the performance of the system. A water spray bar attached to the conveyer will provide fugitive dust control.

OHM CORPORATION
LINDSAY, OHIO

DRAWING NUMBER 13407FLW

PLOT SCALE: 1" = 1'



PROCESS FLOW AND INSTRUMENTATION DIAGRAM

GRANITE CITY
GRANITE CITY, ILLINOIS

FIGURE 2.5

REV	DATE	DESCRIPTION	BY	APPROVED BY
		2-12		

DRAWN BY: DUNGG 11-2-93 | SCALE: AS SHOWN | SHEET NO: 1 OF 1 | REV: C
CHECKED BY:
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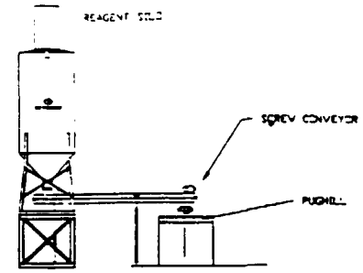

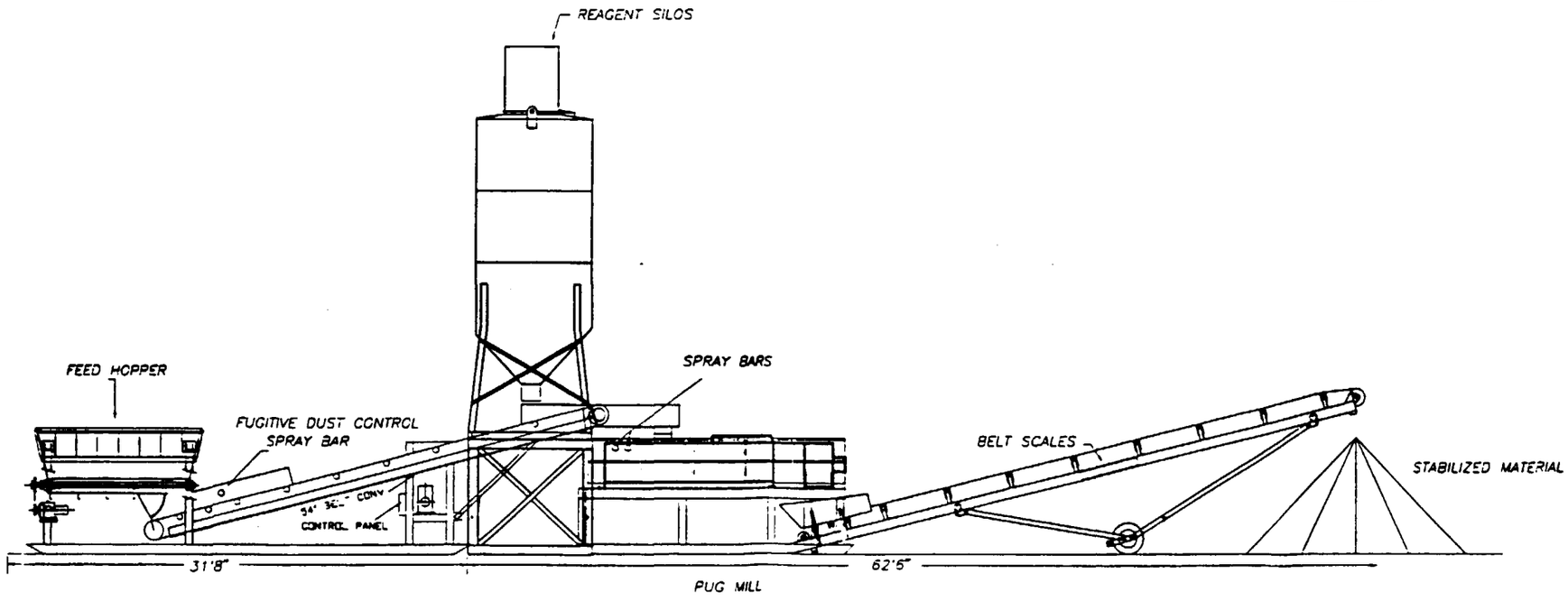

OHM CORPORATION

FIGURE 2.4
PROCESS EQUIPMENT ELEVATIONS

GRANITE CITY
GRANITE CITY, ILLINOIS

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CHECKED BY			DRAWING NO.		

REF: PUGSYS

2.11

4.0 SUBCONTRACTOR MANAGEMENT

OHM plans to manage any procurement under this project as a traditional prime/subcontractor relationship. This includes formal subcontract agreements, fixed-price procurement, and defined work packages. OHM anticipates subcontracting transportation and disposal and laboratory analysis.

The subcontractor will report directly to the project manager or assigned designate. The project manager will also approve any reports generated by the subcontractor prior to delivery to USACE.

OHM will formally report on subcontractor activities at intervals specified in the delivery order or as subsequently agreed upon. At this time, USACE only requires a final report and the QC Daily Report. The reports will include the following:

- Narrative of work accomplished
- Obstacles or challenges and how they were overcome
- Percentage of work complete
- Estimated time to completion
- Other information, as required

OHM recognizes that delivery of materials or services to the location is often a critical-path activity. Monitoring and controlling issued purchase orders are necessary to assure timely completion within the estimated budget.

Purchases of materials are anticipated for this project. Monitoring for delivery is the responsibility of the project accountant (PA), who maintains a master log of issued purchase orders, scheduled deliveries, and actual deliveries. The PA notifies the site supervisor, project manager, and other key project staff members of any delinquencies. Normally, the PA will also telephone the supplier for a status report.

If the situation is not immediately corrected, the project manager will contact OHM's contracts administrator and purchasing department to develop and implement an action plan. The action plan can include invoking penalties in the subcontract or canceling the original purchase order and issuing a new purchase order to a different supplier.

5.0 PROJECT TEAM AND ORGANIZATION

The major positions and individuals responsible for this project are as follows:

- Program Manager: John Hitchings
- Project Manager: Larry Hoffman
- Site Supervisor: Tom Seem

OHM will select other individuals from its staff for the following positions: truck driver, site-safety officer, transportation and disposal coordinator, procurement specialist, chemist, recovery technician, equipment operator, and operations foreman.

APPENDIX A

CHEMICAL DATA ACQUISITION PLAN

CHEMICAL DATA ACQUISITION PLAN FOR THE PRE-PLACED CONTRACT NO. DACW45-89-D-0506, DELIVERY ORDER NO. 17, NL INDUSTRIES/TARACORP SUPERFUND SITE IN GRANITE CITY, ILLINOIS

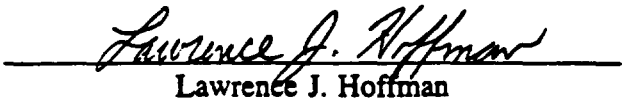
Submitted by:

OHM Remediation Services Corp.
Midwest Region

Prepared by:

Lisa Schwan
Manager, Sample Technician

Approved by:



Lawrence J. Hoffman
Project Manager

March 16, 1995
Project 16473

TABLE OF CONTENTS

1.0 INTRODUCTION

The United States Army Corps of Engineers (USACE) has tasked OHM Remediation Services Corp. (OHM), a wholly owned subsidiary of OHM Corporation, under the Pre-placed Contract No. DACW45-89-D-0506, Delivery Order No. 17, to perform soil removal activities associated with the NL Industries/Taracorp Superfund Site (NL Site) in Granite City, Illinois.

The Contractor's Sampling and Analysis Plan (CSAP) describes OHM's responsibilities with respect to the sampling and analysis associated with the work effort. OHM intends this document to be a site-specific guidance for the field team(s) for the project-required sampling and analysis.

1.1 SITE HISTORY

The NL Site is the location of a former secondary lead smelting facility. Prior to 1903, the facilities at the site included various smelting related equipment and processes. From 1903 to 1983, secondary lead smelting occurred on site. The activities were discontinued during 1983 and equipment was dismantled.

In July of 1981, St. Louis Lead Recyclers, Inc. (SLLR) began using equipment on adjacent property owned by Trust 454 to separate components of Taracorp and send hard rubber off site for recycling. SLLR continued operations until March 1983 when it shut down its equipment. Residuals from the operation remain on Trust 454 property as does some equipment.

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NL Industries (NL) as former owner of the site, voluntarily entered into an Agreement and Administrative Order by Consent with the United States Environmental Protection Agency (USEPA) and IEPA in May 1985 to implement a Remedial Investigation/Feasibility Study (RI/FS) for the site and other potentially affected areas. Taracorp was not a party to the agreement due to the fact that it filed for bankruptcy. The USEPA determined that the site was a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) facility and it was placed on the National Priorities list on June 10, 1986.

1.2 DESCRIPTION

This action requires the excavation and disposal of fill material placed in alleys, parking lots, driveways, and yards in residential communities. The communities include Granite City, Madison, and Venice, Illinois. Based on the Record of Decision (ROD) the action levels established for this action will be 500 parts per million (ppm). Following the removal of the contaminated material, the areas impacted will be restored. This restoration will include sodding the yards and replacing the alleys, driveways, and parking lots.

1.3 PROJECT OBJECTIVES

The objectives of this field effort are to excavate any visible lead battery casings and slag and confirm that all contaminated soil has been removed to the action level of 500 ppm. OHM will follow the direction of USEPA's on-site representative to determine the limits of the excavation(s). OHM will incorporate X-Ray Fluorescence (XRF) screening to assist in complete removal of the contamination. Samples of the excavated material will be obtained to determine appropriate disposal options.

The type of data needed to meet the project objectives will be generated through the installation of hand auger soil borings. The analytical methods required to meet the project objectives are total lead Methods 3050/7421 and TCLP RCRA metals Methods 1311/6010 and 7000 Series. All confirmatory samples will be analyzed by total lead analysis. Two disposal samples will be analyzed by the TCLP RCRA metals analysis. One sample of the backfill will be analyzed for volatile and semivolatile organics and RCRA metals.

The cleanup criteria outlined in the ROD dated March 30, 1990, as defined by the USEPA, requires the removal of all visual contamination from the alleyways and a cleanup criteria of 500 ppm of lead for the residential locations.

1.4 FIELD ACTIVITIES

For all locations, visible battery casing contamination will be removed. A USACE representative will be on site to assist in defining the removal area. At the residential areas, OHM will screen samples on site to quickly determine the level of lead contamination using XRF technology. XRF screening will be performed to assist in removal of all material above 500 ppm lead in the residential areas. XRF screening will be performed approximately every 15 feet in a staggered pattern to be representative of the area.

Verification samples from the residential locations will be sent to an off-site laboratory for analysis. The areas will be backfilled and restored after visual contamination is removed and verification sampling is complete.

1.5 CONTENTS

OHM intends for the activities described herein to comply and adhere to all applicable, federal, state, and local laws and regulations and Applicable, Relevant, or Appropriate Requirements (ARARS), including the most recent USEPA guidelines as outlined in SW-846, and the USACE guidance document ER 1110-1-263 Appendix E.

This CSAP will include the following:

- A detail of all field and laboratory activities
- Documentation related to the chemical data
- A list of equipment to be taken to the field
- Details of the sampling locations and methodologies
- Field screening methods
- Decontamination procedures
- QC procedures
- Sample custody and shipment information
- Analytical methods

Each section is intended to be a stand-alone document related to the task described. Each section will be utilized by the field team(s) to accomplish the specific task. Additional detail, if needed, may be found in other sections or exhibits. The following topics are covered:

- Introduction
- XRF Screening
- Verification sampling
- Disposal/decontamination sampling
- Backfill sampling

Exhibits too detailed for inclusion in the body of this document are included for reference purposes.

2.0 PRE-CHARACTERIZATION SAMPLING

Although no pre-characterization sampling is scheduled, it is addressed in the event of future pre-characterization sampling events.

2.1 OBJECTIVE

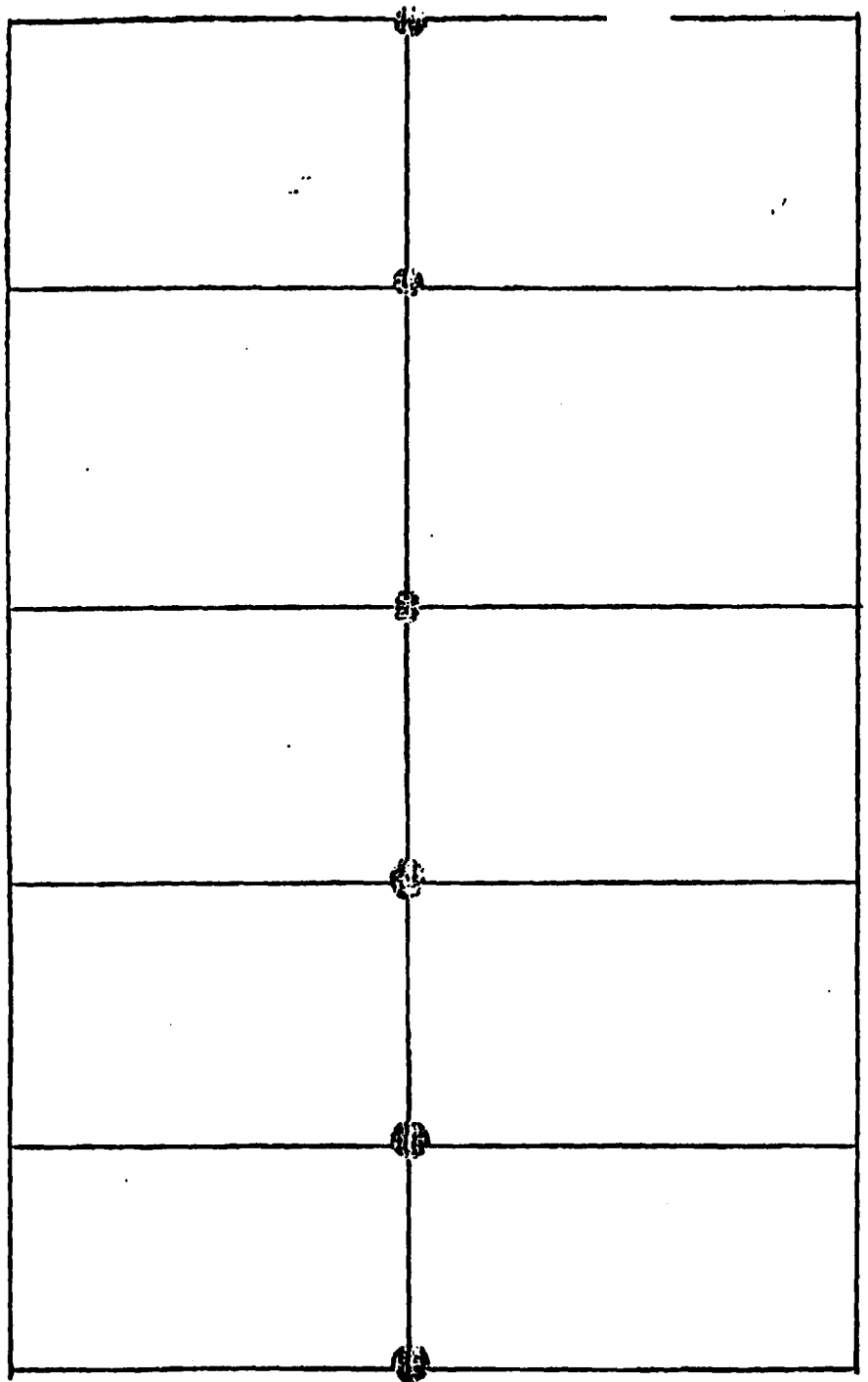
The objective of the pre-characterization sampling is to determine the approximate depth of contaminated soil to be excavated prior to verification sampling.

2.2 TECHNICAL APPROACH

OHM sample technicians will locate the pre-characterization sample points by using a 20-foot grid system. After determining the location of the sample points, the sample technicians will take three separate samples at each point, the first being at 0 to 6 inches, the second at 6 to 12 inches, and the third at 12 to 18 inches. The samples from each depth will be composited for pre-characterization. The composited points will be mapped showing how they were grouped together. See Figure 2-1.

2.3 METHODOLOGY

- Draw a field sketch, including dimensions
- Locate sample points using a 20-foot grid
- Mark sample points using surveyor flags or equivalent
- Use a decontaminated stainless steel hand auger to auger down to the desired depth
- Use clean stainless steel spoons to pull sample at desired depth
- Decontaminate equipment between samples (soap/water/nitric acid/water)
- Mix samples to be composited in clean stainless steel bowl
- Place composited samples in jars, seal, and label
- Place clear tape over label
- Place sample in ziplock baggie
- Place samples with ice and bubble wrap in cooler for shipment
- Complete chain-of-custody (COC), logbook, and airbill
- Ship samples to laboratory for analysis
- On COC form, specify turn around time (24-hour for total lead and 48-hour for TCLP lead)
- Decontaminate any equipment used in sampling
- Dispose of expendable sample items, i.e. gloves
- Complete map with specified sample point locations and dimensions



20' GRID

SAMPLE POINT AT
0"-6"
6"-12"
12"-18"

FIGURE 2-1

PRE-CHARACTERIZATION GRID

2.4 SAMPLE PACKAGING

- Place samples in plastic ziplock baggies and wrap with sorbent pads
- Line bottom of cooler with sorbent pads
- Securely tape drain of cooler
- Place samples in cooler
- Place double bagged ice on top of samples and around samples
- Fill remainder of cooler with sorbent pads
- Sign COC, place in ziplock baggie, and tape to the underside of the cooler lid
- Seal cooler
- Place no less than four custody seals on cooler lid
- Make sure cooler is sealed, addressed, identified, and placarded as environmental samples

2.5 DECONTAMINATION PROCEDURES

Decontamination of sampling equipment will be performed to ensure that all of the contamination is removed in the contamination reduction zone (CRZ) before passing into the support zone.

All liquids and disposable clothing will be treated as contaminated waste and collected for disposal. All equipment leaving the exclusion zone will be cleaned prior to demobilization. Washwater will be treated as contaminated waste and collected for disposal.

2.5.1 Sampling Equipment

The cleaning and decontamination procedure for field sampling equipment is as follows:

- Non-phosphate detergent wash and brushing to remove large particles
- Tap water rinse
- Sample glove change
- Ten percent nitric acid (HNO_3) rinse (trace metal or higher grade HNO_3 diluted with distilled/deionized water rinse)
- Sample glove change
- Double distilled/deionized water rinse
- Total air dry

2.5.2 Sample Containers

Sample containers, prior to arrival at the project site, will be precleaned by the manufacturer to USEPA cleaning protocols as follows:

- All bottles, caps, and liners will be washed in laboratory-grade, non-phosphate detergent
- All bottles, caps, and liners will be rinsed three times with distilled water

- Bottles, caps, and liners will be rinsed with a 1:1 solution of HNO_3
- Bottles, caps, and liners will then be rinsed three times with ASTM Type 1 organic-free water
- Bottles, caps, and liners will be oven-dried for 1 hour
- Bottles, caps, and liners will be rinsed with hexane
- Bottles, caps, and liners will be oven-dried again for 1 hour

All sample jar certificates of analysis will be filed.

2.6 SAMPLE CONTROL

Field personnel are responsible for the identification, preservation, packaging, handling, shipping, and storage of samples obtained from this site. All samples must be readily identifiable and retain, to the extent possible, the in-situ characteristics to be determined through testing. All samples collected for disposal parameters analysis will be validated through the following procedures and preparations of a COC record form.

2.6.1 Sample Containers

Soil samples taken for total lead analysis will be packaged in precleaned, 8-ounce, wide-mouth, clear glass jars secured with a Teflon-lined lid (Eagle Picher No. 131-08C, or equivalent) precleaned to USEPA Protocol A.

2.6.2 Sample Number

All samples obtained during the course of this project will be consecutively numbered. Each sample identification number will begin with the lot number. The sample numbers will then follow in consecutive order. If the sample point is a re-sample it will be designated by a letter following the sample number.

An example would be the following:

- Lot-210 Terry resample of point 3 would be: S210Te-003a

2.6.3 Sample Label

Correct sample labeling and the corresponding notation of the sample identification numbers in the field logbook are necessary to prevent misidentification of samples and their eventual results. All sample labels will be legibly completed with indelible ink. The completed label will be affixed to the sample bottle and covered with clear tape. All sample labels will include, at a minimum, the following information:

- Name/initials of collector
- Name/initials of witness
- Date and time (in military time) of sample collection

- OHM project number (16473)
- Place of collection
- Sample identification number (will uniquely identify each sample)
- Matrix and appearance of sample
- Analysis required
- Preservatives added (if any)
- Designation between "grab" and "composite" sample

2.6.4 Field Log

OHM will record information from the sample collection activities in the sampler's field logbook. The log will be a diary of the sampler's activities and will contain sample point locations, appearance, date and time of sample, sampler's identity, and other pertinent observations.

2.6.5 Chain-of-Custody Procedures

All samples taken on this site will be verified with COC procedures. The procedures followed will be in accordance with USACE Sampling Handling Protocols and USACE procedures. It is very important that the information on the COC record forms be completed, enclosed in a plastic Ziplock bag, and taped to the underside of the lid of the shipping containers.

2.6.6 Sample Preservation

The post excavation soil samples submitted for confirmation analysis will be placed on ice to maintain each sample's temperature at 4° C.

2.7 ANALYSIS

The soil samples submitted for confirmation analysis will be analyzed according to USEPA's Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, SW-846, 2nd Edition, September 1986. The soil samples submitted for Total Lead Analysis will be prepared by SW-846 Method 3050, "Acid Digestion of Sediments, Sludges, and Soils," followed by the USEPA Method 6010.

The samples for metals analysis will be analyzed within 6 months, the maximum allowable holding time. Soil and sediment sample results will be calculated and reported on a dry weight basis.

2.8 EQUIPMENT REQUIREMENTS

- Stainless-steel hand auger or equivalent
- Stainless-steel mixing bowl
- Stainless-steel scoops
- Stainless-steel spatulas

- Vinyl sample gloves
- Non-phosphate detergent
- 32-ounce, wide-mouth, clear glass sample jars with Teflon-lined lids
- 8-ounce, wide-mouth, clear glass sample jars with Teflon-lined lids
- 4-ounce, wide-mouth, clear glass sample jars with Teflon-lined lids
- 54-quart coolers
- Bale of sorbent pads
- Ice
- Paper towels
- Field logbook
- COC record forms
- 5-gallon buckets
- 1:10 nitric acid (HNO_3)
- Deionized water
- Scrub brush
- Sample labels

3.0 VERIFICATION SAMPLING

3.1 OBJECTIVE

The objective of verification sampling is to confirm that the removal of contamination is at less than 500 milligrams per kilogram (mg/kg).

3.2 TECHNICAL APPROACH

OHM sample technicians will locate the post-excavation sample points after excavation activities are completed. A 25-foot grid system will be used to locate the sample points. Five grab samples will be taken from each section of the 25-foot grid and composited. The location of the five grab samples will be in an X pattern within the grid section. A duplicate sample for Quality Assurance/Quality Control (QA/QC) purposes will be taken every fifth grid-point location. See Figure 3-1.

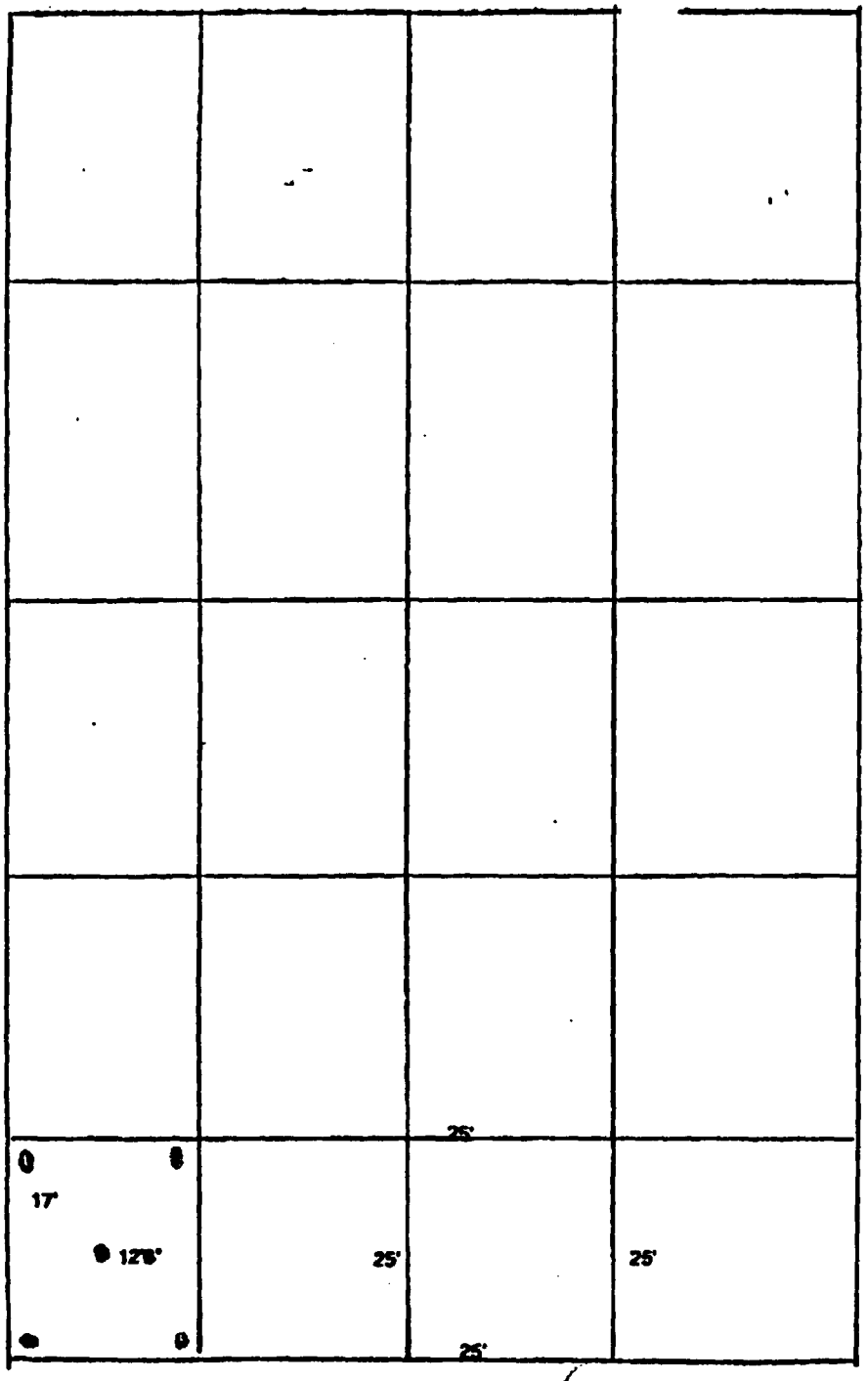
3.3 METHODOLOGY

- Field sketch including dimensions.
- Divide area into 25-foot grid sections.
- Determine and mark five sample points in each 25-foot grid section. One sample comes directly from the center of the grid section, the other four points are to be taken at a 17-foot diagonal from the center point.
- Using clean stainless-steel spoons, dig down until undisturbed soil is reached, then using a clean stainless-steel spatula take the sample. Take four remaining samples in the same manner.
- After taking the samples from the five points mix in a stainless-steel mixing bowl.
- The mixture will be spread into a thin layer and quartered. Opposite quarters will be discarded and the mixing, quartering, and splitting process continued until no less than 8 ounces by volume remain.

This process will be repeated for every grid section. All sample packaging and decontamination procedures are to be followed as in Section 2.3.

3.4 ANALYSIS

All verification samples will be screened on the XRF to determine if they fall under 500 ppm and will be sent to an off-site laboratory for total lead analysis.



SAMPLE POINT

25' GRID

ALL SAMPLE POINTS ARE SURFACE SAMPLES

FIGURE 3-1

VERIFICATION GRID

4.0 PUGMILL SAMPLING

After contaminated soil is stabilized through the pugmill, the stockpiles that occur will be sampled for disposal purposes.

4.1 OBJECTIVE

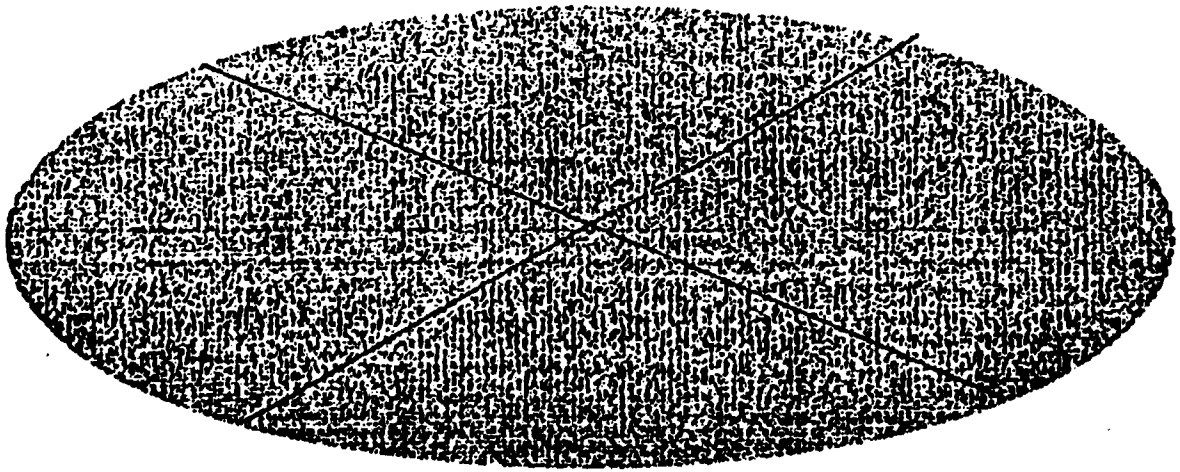
The objective of pugmill sampling is to verify that the lead in the soil is stabilized to meet RCRA Disposal Requirements for Special Waste.

4.2 METHODOLOGY

- For every 100 cubic yards of soil that is processed, a 1-quart grab sample is to be taken.
- Divide the pile into four quadrants and find the middle of each quadrant.
- Determine the height of the pile.
- Take one grab sample from the surface, one from the middle, and one from the bottom of each quadrant.
- Composite all grab samples.
- Prepare sample for shipping as in Sections 2.3 and 2.4.
- Document, log, and map the location of each sample taken for tracking purposes.
- Send samples off site for TCLP analysis. All decontamination procedures are to be used as in Section 2.0. See Figure 4-1.

4.3 ANALYSIS

The pugmill samples are to be sent to a Missouri River Division (MRD) approved off-site laboratory for TCLP analysis. The test methods to be used are USEPA TCLP Method 1311, sample preparation Method 3010, and analytical Method 7420 (AA Lead). All pugmill samples are to be on a 24-hour turnaround time.



PILE SAMPLE POINTS ARE IN THE CENTER OF EACH QUADRANT. QUADRANTS ARE OF EQUAL SIZE.
ONE SAMPLE COMES FROM SURFACE, ONE FROM MID(CENTER) OF PILE AND ONE FROM THE BOTTOM. THIS IS FOR EACH QUADRANT

FIGURE 4-1

PUGMILL SAMPLE GRID

5.0 QA SAMPLING

Five QA split samples will be sent to the USACE Quality Assurance (QA) laboratory by overnight delivery for government monitoring of sampling and contract laboratory performance. The government (USACE) QA laboratory designated for this project is:

U.S. Army Corps of Engineers
Missouri River Division Laboratory
ATTN: CEMRD-EP-LC (Sample Custodian)
420 South 18th Street
Omaha, NE 69102
Telephone: (402)444-4314

OHM shall notify the QA Laboratory one week prior to the first delivery of samples. The QA laboratory will also be notified when final shipment of samples has been sent at the completion of the sampling activities. OHM will also ensure that the project identification "MRD LIMS_____" will be added to the labels and COC forms for the QA samples shipped to the MRD laboratory.

OHM will also submit all data for the samples to the MRD laboratory and the USACE Omaha District office for data evaluation and QA/QC comparison within 30 days of receipt of the samples. The report package will include all sample and internal QC results such as method blanks, spikes, spike duplicate recoveries, and replicate analyses.

Duplicate samples will be taken at the rate of one for every ten samples collected. These will be analyzed and analytical results will be compared. Splits from these samples will be sent to the MRD laboratory as described above.

APPENDIX B

ADDENDUM TO SITE-SPECIFIC HEALTH-AND-SAFETY PLAN AND AIR SAMPLING PLAN

ADDENDUM TO SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR STABILIZATION OF MATERIALS IN GRANITE CITY, MADISON, AND VENICE, ILLINOIS ASSOCIATED WITH NL INDUSTRIES/TARACORP SUPERFUND SITE

CONTRACT NO. DAWC45-89-D0506
DELIVERY ORDER NO. 17

Submitted to:

United States Army Corps of Engineers
Omaha, Nebraska

Prepared by:

OHM Remediation Services Corp.

Reviewed by:

Billy R. Thomas

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Lawrence J. Hoffman

Lawrence J. Hoffman
Project Manager
Midwest Region

March 16, 1995
Project 16473

TABLE OF CONTENTS

1.0 INTRODUCTION

This addendum is issued to address the addition of tasks to the existing site-specific health and safety plan for work in Granite City, Madison, and Venice, Illinois associated with NL Industries/Taracorp Superfund Site.

New tasks to be performed include handling and stabilization of waste material using a pugmill. The scope of work for this addendum is as follows:

- Mobilize and set up
- Stage and handle soil
- Load soil into pugmill and stabilize material
- Stockpile material
- Decontaminate equipment and demobilize

The following hazard assessment has been prepared in the form of phase safety plans, to identify potential hazards and preventative measures associated with the tasks to be performed for this project.

This hazard assessment addresses the following five tasks:

- Mobilize and set up
- Stage and handle soil
- Load soil into pugmill and stabilize material
- Stockpile material
- Decontaminate equipment and demobilize

2.1 PHASE SAFETY PLAN

JOB/PHASE/TASK	HAZARDS TO BE CONTROLLED	ACTION TO BE TAKEN TO OVERCOME HAZARDS
Mobilize and Set Up	Potential atmospheric hazards	1) Implement air monitoring program for detection of lead and dust. 2) Exclusion zone shall be delineated and PPE shall be utilized as necessary. 3) Safety orientation meetings must be held. 4) Appropriate dust control measures shall be implemented as necessary.
	Potential contact hazards from chemical agents	1) Visually inspect work area for presence of chemical contamination (lead battery casings).
	Strains from manually moving materials and equipment	1) Personnel shall be directed to use proper lifting techniques such as keeping back straight, lifting with legs, limiting twisting, and getting help in moving bulky/heavy materials and equipment. 2) Hand truck use shall be encouraged. 3) Heavy equipment safety procedures shall be implemented. 4) All heavy equipment shall be inspected daily and documented prior to use.

2.1 PH..SE SAFETY PLAN

JOB/PHASE/TASK	HAZARDS TO BE CONTROLLED	ACTION TO BE TAKEN TO OVERCOME HAZARDS
Mobilize and Set Up (continued)	Slips, trips, and falls from various agents	1) Work areas shall be visually inspected and pre-existing slip, trip, and fall hazards shall be marked, barricaded, or eliminated as is feasible. 2) Work areas shall be kept neat and in an orderly state of housekeeping. 3) Proper illumination shall be maintained in work areas.
	Electrocution	1) Only qualified electricians shall be allowed to hook-up electrical circuits. 2) All extension cords shall be inspected daily for structural integrity, ground continuity, and damaged areas. 3) Extension cord inspection should be documented, ground fault circuit interrupters (GFCI) should be used on 110-120 v circuits. 4) Electric wire or flexible cord passing through work area shall be covered or elevated to protect it from damage by foot traffic, vehicles, sharp corners, projections, or pinching. 5) Plugs and receptacles shall be kept out of water unless of an approved submersible type. 6) All electrical circuits shall be grounded in accordance with the NEC and the NESC.

2.2 P...SE SAFETY PLAN

JOB/PHASE/TASK	HAZARDS TO BE CONTROLLED	ACTION TO BE TAKEN TO OVERCOME HAZARDS
Stage and handle soil	Heavy equipment hazards	1) Only trained and qualified personnel shall operate heavy equipment.
		2) All heavy equipment shall be inspected daily prior to work; inspections shall be documented.
		3) Appropriately mark the equipment path and swing radius to prevent injury to ground personnel.
		4) Equipment shall be outfitted with the appropriate safety devices--backup alarms, fire extinguishers, etc.
		5) Mark the area to prevent vehicles and personnel from entering. Mark or barricade any unstable ground.
		6) Identify and protect any utility lines overhead/ underground.
	Slip, trip, and fall hazards	1) Maintain good housekeeping in the work area. Appropriately store all tools and equipment; use adequate lighting for work operations.
	Exposure to materials/dust	1) Personnel shall wear appropriate level of PPE during work operations.. A minimum of Level C PPE shall be worn unless air monitoring confirms a downgrade in PPE is appropriate.
		2) Personnel and area monitoring for total dust and lead in air shall be performed as outlined in the HASP.
		3) Personnel shall perform a thorough decontamination before leaving the site. Wash hands, arms, face, neck prior to eating, drinking, smoking, etc.

2.2 Ph. .E SAFETY PLAN

JOB/PHASE/TASK	HAZARDS TO BE CONTROLLED	ACTION TO BE TAKEN TO OVERCOME HAZARDS
Stage and handle soil (continued)	Exposure to materials/dust	1) Soils shall be staged in a building prior to stabilization to control dust generation and potential spread in contamination. 2) The building floor will be lined with HDPE and wooden planks to prevent migration of dust or contamination into soils. 3) A soil berm will be constructed around the building to prevent water seepage into the building. The building will be structurally sound to support wind, rain, and snow. 4) The building will have two openings, sized to allow a frontend loader or same sized equipment to enter and exit. The doors will be open during loading operations, and closed at other times to prevent dust migration. 5) The only work activities associated with the building include erection of the building, loading soil for staging, and removal of soil. Personnel shall perform soil handling in the building with heavy equipment; it is unlikely that much manual handling activities will take place in the building. A minimum of Level C PPE shall be used until/unless air monitoring supports a downgrade in PPE. 6) Personnel air samples shall be taken as outlined in the Air Sampling Plan to evaluate exposure to personnel working in the soil staging area/building.

2.3 PHASED SAFETY PLAN

JOB/PHASE/TASK	HAZARDS TO BE CONTROLLED	ACTION TO BE TAKEN TO OVERCOME HAZARDS
Load soils into pugmill and stabilize materials	Heavy equipment hazards	1) Only trained and qualified personnel shall operate heavy equipment. 2) All heavy equipment shall be inspected daily prior to work; inspections shall be documented. 3) Appropriately mark the equipment path and swing radius to prevent injury to ground personnel. 4) Equipment shall be outfitted with the appropriate safety devices--backup alarms, fire extinguishers, etc.
	Exposure to contaminants/dust	1) A water spray bar shall be used to control dust generation for the materials entering the pugmill. This device shall be activated as necessary to control dust. 2) Personnel shall wear a minimum of Level C PPE during pugmill operations until/unless air monitoring indicates a downgrade in PPE is appropriate. 3) Personnel shall perform a thorough decontamination prior to leaving the site. Wash face, neck, arms, and hands prior to eating, drinking, smoking, etc. 4) The silo used for storage of stabilization chemicals will be equipped with a top mount bag house for dust control during silo filling.

2.3 Pl. 3 SAFETY PLAN

JOB/PHASE/TASK	HAZARDS TO BE CONTROLLED	ACTION TO BE TAKEN TO OVERCOME HAZARDS
Load soils into pugmill and stabilize materials (continued)	Equipment/pugmill hazards	1) Equipment (pugmill) shall be appropriately de-energized and locked/tagged out prior to performing any maintenance operations or adjustments. 2) Appropriate machine guards shall be in place during operation. Equipment shall not operate when machine guards are removed, damaged, missing, etc. 3) Appropriate operating procedures shall be reviewed and followed with regard to adding materials, checking progress, making adjustments, etc. 4) Provisions for using power screen and crusher, etc., shall be covered. Personnel shall operate equipment in such a way to prevent injury from flying debris. Avoid work directly beneath conveyors to prevent injuries from overflow of debris, etc.

2.4 PHASE SAFETY PLAN

JOB/PHASE/TASK	HAZARDS TO BE CONTROLLED	ACTION TO BE TAKEN TO OVERCOME HAZARDS
Stockpile Materials	Heavy equipment hazards	1) Only trained and qualified personnel shall operate heavy equipment. 2) All heavy equipment shall be inspected daily prior to work; inspections shall be documented. 3) Appropriately mark the equipment path and swing radius to prevent injury to ground personnel. 4) Equipment shall be outfitted with the appropriate safety devices--backup alarms, fire extinguishers, etc.
	Exposure to materials/dust generation	1) Stockpiled materials will be covered with tarp at the end of the day to prevent contact with precipitation and to minimize dust generation. 2) Personnel shall wear the appropriate level of PPE as dictated by the air monitoring results (minimum of Level C unless results indicate a downgrade is appropriate).

2.5 PHASE SAFETY PLAN

JOB/PHASE/TASK	HAZARDS TO BE CONTROLLED	ACTION TO BE TAKEN TO OVERCOME HAZARDS
Decontaminate equipment and demobilize	Potential atmospheric and contact hazards from chemical agents	1) All equipment will be decontaminated prior to being removed from the area
		2) PPE shall be used as required.
		3) All general chemical hazards in the area and decontamination solution must be stored in the appropriate containers in the designated areas. Personnel shall be appropriately informed of all site hazards, including chemicals, prior to the start of work. MSDSs shall be available on-site for chemicals present; containers shall be appropriately labeled as to contents.
		4) Ambient air monitoring for lead and other chemicals used on-location and visual monitoring shall be used to verify selection of PPE.
	High pressure washer hazards	1) Standard operating procedures for high pressure washer safety must be followed (see Appendix E).
	Strains from use of tools such as shovels and scraper	1) Personnel shall maintain a rational pace when using tools and shall be given an adequate rest period.
		2) Tools shall be appropriate for the task and maintained in good condition.

2.5 PHASE SAFETY PLAN

JOB/PHASE/TASK	HAZARDS TO BE CONTROLLED	ACTION TO BE TAKEN TO OVERCOME HAZARDS
Decontaminate equipment and demobilize (continued)	Strains from manually moving materials and equipment	1) Personnel shall be directed to use proper lifting techniques such as keeping back straight, lifting with legs, limiting twisting, getting help in moving bulky/heavy loads, and using mechanical equipment to move material and equipment.
		2) Hand truck use shall be encouraged.
		3) Personnel shall work at a rational pace.
	Slips, trips, and falls	1) Work area shall continue to be visually inspected and slip, trip, and fall hazards shall be marked, barricaded, or eliminated as is feasible.
		2) Work area shall be kept neat and in an orderly state.
		3) Proper illumination shall be maintained in work areas.
	Electrocution	1) Only qualified electricians shall be allowed to disconnect electrical circuits.
		2) All extension cords shall continue to be inspected daily for structural integrity, ground continuity and damaged areas.
		3) Ground fault circuits shall be used on all 110-120-v circuits.
		4) The safety actions specified in Section 4.1 also apply

TABLE 3.1

LEVELS OF PROTECTION FOR WORK TASKS

Work Task	Level of Protection
Mobilize and set up	Level D
Stage and handle soil	Level C*
Load soil into pugmill and stabilize material	Level C*
Stockpile material	Level C* or D
Decontaminate equipment	Level C* or D
Demobilize	Level D

*A minimum of Level C PPE, including an air purify respirator, will be used during soil handling operations. If air monitoring indicates that levels of contamination are below the OSHA exposure limits, and the Site Safety Officer and USACE Representative are in agreement, a downgrade to Level D PPE may be initiated.

NOTE: Levels of protection may be upgraded or downgraded depending on actual field conditions as observed by the HSO. All changes in the protection level must be approved by the Regional Manager of Health and Safety.

Air monitoring will be performed during the added tasks, to quantify personnel exposure/area emission of dust and lead in air.

4.1 SAMPLE COLLECTION

NIOSH method 7082 will be used for collection and analysis of samples. Battery operated air sampling pumps, fitted with 37 millimeter (mm) MCE (mixed cellulose ester) filter cassettes shall be used.

Personnel who are most likely to be exposed to lead will be monitored to ensure compliance with 29 CFR 1910.1025. (For example, two workers in the area and the equipment operator).

Personnel and area air monitoring for lead and total dust will be the same as was performed for the original scope of work for this project. Refer to the existing site-specific health and safety plan for air monitoring provisions.

4.2 DUST CONTROL

The following controls will be used on site to prevent dust generation:

- A material storage building will be used to house soils prior to stabilization operations. The structure of the building will be capable of withstanding weather conditions. The floor of the building will be covered with a liner and wooden planks to prevent the spread of contamination. The building will have two doors that will open only to allow equipment to move materials in and out of the building.

- A water spray bar will be used during the stabilization process to control dust generation from soils and stabilization chemicals.

- Stockpiles of stabilized materials will be covered with tarp at the end of the day or as needed to prevent dust generation.

Pugmill Operation

OHM's pugmill is specially designed to handle a wide variety of wastes and materials. The design criteria employed provides strength and durability as well as a varied range of material processing capability. The pugmill design is compatible with the lead contaminated soils from these sites.

The mixer is 4 feet wide by 9 feet long and is rated at 80 tons per hour capacity at 50 pounds per cubic foot. The unit requires a stable soil base. Based on an extended length configuration, coupled with closely placed paddles, the pugmill optimizes mixing thoroughness through increased blade interaction with material. Paddles are bolted onto structural steel shafts with replaceable shafts flanged on both ends for ease of maintenance. The paddles are high carbon steel and heat treated welded at both ends. The mixer is V-belt driven by two motors with variable speed drives. Dust control will be achieved in the pugmill by use of a water spray bar. Capacity is directly proportional to bulk density of the material; OHM anticipates a 60-ton per hour throughput of treated material based upon past experience.

During the daily pugmill operation, the pugmill operator routinely inspects the plant for overflows or leaks and corrects the production or equipment accordingly. Before startup each day, the pugmill is inspected for worn parts or corrosion and repaired if required.

Stabilization Additive Feeding

Stabilization additive is stored on site in a vertical cement silo. The silo is self-leveling and has a capacity of 50 tons of material. The silo is also equipped with a top mount baghouse for dust control during silo filling. A tanker will be located next to the silo to fill the silo pneumatically on an as-needed basis.

The silo feed would be controlled by an 8-inch diameter rotary screw feeder, powered by a 3 horsepower motor. The motor speed is variable, to control the addition of media to facilitate a process rate of 60 tons per hour.

Post-Treatment Storage

A conveyor system will carry the treated material from the pugmill bed to the treated waste stockpile area. Prior to placement of the stockpiles, an HDPE/CA-6 stone/asphalt containment system will be placed on the ground. Each pile will consist of 100 cubic yards and each pile will be labeled. Processed waste piles will remain in the stabilization area until acceptable analytical results permit shipment. At the completion of the day's activity, the waste piles will be covered to prevent contact with precipitation and to minimize dust emissions from the stabilized material storage area.

To comply with disposal facility requirements, the treated material will be stockpiled in 100-cubic yard piles for post treatment confirmation. These samples will be taken as representative grab samples from each stockpile.

Process Control

The stabilization system will be calibrated on a weight-to-weight basis with the waste material to be stabilized and the stabilization additive. Initial calibration will be conducted by weighing an aliquot of the waste material with as-is moisture content. The weight of the stabilization additive will also be determined. These weights will be accomplished on site using portable scales. In a pilot test of the system, the calibration data will be run in test batches to determine if a suitable mix has been obtained by passing TCLP. If changes in the blends are required during operation, the operator will make the adjustment(s). Periodic samples will be taken to confirm initial calibration settings.

2.7.6 Operating Schedule

The proposed operating schedule is 8 hours per day, 6 days per week for an estimated duration of 2 months. Two hours will be required at the end of each day to clean out process conveyors, pugmill, and reagent lines to minimize blockage problems the next operating day. OHM will run the plant only when a full day's production is stockpiled.

2.7.7 Process Weight

Waste battery casings/soil will be processed at a maximum flow rate of 70 tons per hour. The average flow rate is expected to be around 50 tons per hour. The flow rate for the stabilization reagent is expected to be approximately 17.5 percent of the wastestream. The reagent percentage has been determined by bench tests in the OHM Findlay Treatability Laboratory as shown in Appendix E.

2.7.8 Emissions Summary

Emissions to the air occur at the baghouse filter located on top of the reagent silo. The 300 barrel silo which will contain reagent has a baghouse vent filter rated at 99.6 percent captures at 1.0 micron. Emissions may also occur at the pugmill feed inlet located at the top of the mill housing. In order to minimize the uncontrolled emissions, the mill housing will have a water spray bar to suppress dust.

Since the waste has considerable moisture associated with it, potential for any emissions do not exist at the waste receiving hopper or at the discharge conveyor. Should the waste material dry to the moisture level to create emissions, possible emission sources and the proposed control measures are as follows:

- Power screen hopper and discharge - hand held water spray
- Material feed hopper - attached water spray bar
- Pugmill housing - attached water spray bar
- Reagent silo - attached baghouse

2.8 SOILS TESTING TO VERIFY FIXATION PROCESS

OHM will utilize an off-site MRD-approved laboratory with 3-day turnaround time. Testing of treated soil will be by USEPA TCLP Method 1311, sample preparation Method 3010, and analytical Method ICP 6010 (AA lead). Soil piles that fail this testing process will be reprocessed through the pugmill system. OHM does not expect additional grinding will be required before rerun.

2.9 TRANSPORTATION AND DISPOSAL

Hazardous wastes will be stockpiled on the stabilization pad until USACE approves mobilization of the pugmill or determines another means of final disposal. If the pugmill is mobilized, OHM will submit a nonhazardous waste profile of stabilized waste to a landfill in the state of Illinois which will require 21 days for IEPA approval after analytical results are provided for the green sheet analysis. An alternate nonhazardous landfill will also be provided. The processed nonhazardous waste will be stockpiled in the designated area for shipment to the approved nonhazardous landfill after passing TCLP analysis. The wastestream will be preapproved to permit shipment during processing. Nonhazardous waste stockpiles will be staged by proper identification to parallel identification during processing. It is anticipated 6,000 tons of stabilized waste material will be the maximum amount of material staged on site. Shipment of nonhazardous waste will take approximately 3 weeks depending upon the accepted landfill schedule. OHM anticipates this maximum storage amount will never be achieved since shipment is to progress during the stabilization operation.

Decontamination water will be used for dust control during the loadout of processed materials. OHM anticipates minimal disposal of any decontamination liquids due to the usage of this water for dust control and the reagent mixing.

2.10 SITE SECURITY

OHM personnel will monitor site security during the daylight operating hours. Security guards will monitor site security on the nonoperating hours. The existing perimeter fencing will be maintained with appropriate signs to keep out unauthorized personnel.

Personnel operating the stabilization plant will have hand-held portable radios for continual communication to the base station for emergencies. Air horns will also be available to signal emergency condition for site personnel. The base station will be prepared to call in emergency services required for the site.

2.11 PLANT DEMOBILIZATION

All equipment operating in the exclusion zone will be cleaned with high-pressure water for decontamination of residual or hazardous waste. The pugmill, conveyors, and all structures will require sand blasting to remove hardened stabilized material buildup. This residual material from

the process operation will not require further stabilization and will be disposed with the nonhazardous stockpile.

All protective liners for containment systems will be cut up and stabilized if they fail TCLP analysis. The CA-6 stone material between the liners will only be stabilized if the material fails the TCLP lead analysis. All containment system materials will be shipped to the approved landfill. All wastewater will be mixed with processed material for shipment, where possible. Any remaining decontamination water will be disposed at an approved facility. All residual wastes from the process treatment and stockpiles will be removed and properly disposed. Only existing contaminated soil will be left on site.

2.12 FINAL PROJECT REPORT

OHM will issue a final report at the completion of the project. The report will be prepared in draft final form for USACE review. The report will contain a summary of the work performed at each location, photographic documentation, analytical report, operation of treatment process weights, and transportation and disposal documentation.

3.0 TECHNICAL APPROACH

This section discusses the operational methods, types of personnel, and equipment which will be utilized to complete the scope of work.

3.1 SCHEDULE MONITORING AND CONTROL

The work tasks will be performed according to a schedule developed for the project. Any major modifications to the work plan will be submitted to USACE for review prior to the actual implementation of the modification.

The schedule will be monitored and controlled in conjunction with the tracking of costs through the use of computerized cost/resource tracking and project management techniques developed by OHM.

3.1.1 Submittals

Submittals include this draft project work plan submitted as per the USACE scope of work dated June 23, 1994; daily submittals; weekly status reports; hazardous-waste manifest biennial reports; hazardous-waste manifests; IEPA letter for special manifest procedures; and a final report.

Weekly status reports will be prepared in accordance with the requirements of the scope of work and submitted by 0700 Central Standard Time on each Monday to the locations specified in Table 1 of the scope of work.

OHM will submit to USACE estimates of the amounts and types of wastes generated at the location for disposal in the weekly status reports and annual and biennial hazardous-waste manifest reports. OHM will also prepare special waste biennial reports for non-hazardous special waste disposal at facilities outside of Illinois. OHM will obtain currently required reporting forms related to the shipment and disposal of hazardous waste as per the scope of work.

Based on information provided by USACE/USEPA/IEPA, the excavation sites are part of the NL Industries/Tara Corp. Superfund Site and waste excavated from these sites will still require hazardous waste manifests for shipping to the Trust 454 site. The letter from the IEPA with specific manifest details will be included in the final report. OHM will prepare manifests for USACE review, approval, and signature prior to the scheduled shipment of any hazardous wastes. OHM will also submit relevant shipping papers for nonhazardous wastes which may require transportation and disposal from this project. OHM's Midwest Region Transportation and Disposal Department will prepare hazardous waste manifests, nonhazardous waste shipping papers, and bills of lading for nonhazardous waste. OHM's transportation and disposal coordinator will review all waste profiles, land disposal restriction notifications, certifications, and waste manifests prior to their submittal to USACE.

OHM's transportation and disposal coordinator will submit all relevant supporting documentation such as analytical reports and material safety data sheets with the above-mentioned documents, accompanied with a cover letter which describes the logic by which specific waste disposal alternatives are suggested by OHM to USACE. OHM will not ship any wastes without prior approval and signature of waste manifests by USACE on behalf of the USEPA.

The preparation of the final report is discussed in Section 2.12 of this work plan.

3.2 PRECONSTRUCTION ACTIVITIES

Preconstruction activities for this project include the following items:

- Attending a preconstruction meeting with USACE
- Issuing subcontracts for subcontracted work which can be defined prior to initiation of the project
- Communicating with JULIE to locate potential underground utilities at the job site
- Obtaining permits as needed
- Obtaining soil samples for waste characterization
- Others as needed
- Videotaping of residential property so that it can be properly restored following completion of the project

OHM understands that USACE has arranged for right of entry to the contaminated areas from the USEPA and adjoining land owners as necessary.

3.3 CONSTRUCTION ACTIVITIES

The primary construction activities for this project include the following:

- Mobilization of personnel and equipment
- Site preparation including clearing and grubbing of support areas and the set up of site office, support zones, decontamination stations, and exclusion zones.
- Site preparation and fencing of the stabilization area at Taracorp/Trust 454 property

- Stabilization of lead contaminated hazardous waste
- Excavation of contaminated soil
- Visual and/or analytical determinations of removal criteria fulfillment
- Backfill and compaction activities
- Paving and/or landscaping activities

3.3.1 Site Preparation

Site preparation includes the setup of a support office near the work area and the establishment of support zones, decontamination stations, and exclusion zones.

The office will be set up in buildings owned by the USACE located at the former USACE maintenance facility. Electrical power is already available at site, and telephone lines will be arranged by OHM. The off-shift storage of secured equipment will also be at this location. A secure, fenced area for the storage of the nonhazardous wastes will be constructed on Taracorp/Trust 454 property.

Many areas, mainly in Eagle Park, will need to be grubbed prior to excavation. An advance crew with appropriate equipment such as brush-hogs will clean and prepare these locations.

Dust control will be a major effort. A hydro meter with hose will be available at all times to prevent fugitive emissions. Water from decontamination sources will be recycled this way.

At an approved date and time, the pugmill system will be brought on site and set up to treat soil type materials at the Trust 454 site.

All sampling equipment utilized at the locations will be decontaminated according to the procedures described in the CDAP.

3.3.2 Site Excavation

Each of the locations has unique characteristics which mandate particular methodologies of remediation. But, in general, the locations can be separated into two categories: residential yards and alleys/driveways/parking lots. This section describes the general remediation methodology for these two categories and the following sections describe each individual location's nuances that need to be addressed.

3.3.2.1 Residential Areas

Most of the residential yards that need to be remediated will include the removal of sod and a varying depth of soil with visible battery chips. These wastes will be excavated using a tracked

excavator, backhoe, and/or a Bobcat. At some locations hand digging will be necessary. The largest piece of equipment that can be utilized given the logistics of the location will be used. Hazardous soils will then be loaded into the licensed hauler trucks for transportation to the Trust 454 property stabilization pad. Nonhazardous soils will be directly loaded into trucks for shipment to an approved landfill. After analytical approval, the excavation will be backfilled and seeded or sodded.

3.3.2.2 Alleys/Driveways/Parking Lots

Most of the alleys, driveways, and parking lots to be remediated are aggregate soil mixtures. Most locations are accessible to the tracked excavator but some will require smaller equipment and hand digging. The wastes removed from the alleys and parking lots will be segregated as hazardous or nonhazardous waste according to the ROD and handled as described above for the residential properties. The hazardous waste will be directly loaded into licensed haul trucks and hauled to the stabilization operation site. Nonhazardous soil will be loaded into trucks for direct shipment to an approved landfill. After analytical approval, alleys will be backfilled and chip sealed. The alleys will require minor landscaping at the edges of the pavement (i.e., top soil, raking, and seeding).

3.4 ON-SITE WASTE TREATMENT

Treatment of waste materials are as described in Section 2.7 of this work plan.

3.5 WASTE TRANSPORTATION AND DISPOSAL

Wastes removed from the several sites will be transported to one of two locations. Hazardous wastes will be transported to the Trust 454 property for stabilization. This transportation will be documented using manifests approved by the IEPA. Stabilized hazardous waste which will be re-characterized as nonhazardous waste will be transported to a nonhazardous RCRA Subtitle D landfill. Nonhazardous wastes removed from the several sites will be transported directly to the nonhazardous waste Subtitle D landfill. OHM will utilize licensed haulers and disposal firms.

Hazardous waste will be stockpiled on the stabilization pad until USACE approves mobilization of the pugmill or determines another means of final disposal.

AIR SAMPLING PLAN ADDENDUM TO THE QUALITY ASSURANCE PROJECT PLAN FOR THE STABILIZATION ACTIVITIES ASSOCIATED WITH THE NL INDUSTRIES/TARACORP SUPERFUND SITE GRANITE CITY, ILLINOIS

Submitted to:

United States Army Corps of Engineers
Omaha, Nebraska

Prepared by:

OHM Remediation Services Corporation

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March 16, 1995
Project 16473

TABLE OF CONTENTS

1.0 INTRODUCTION

OHM Remediation Services Corp. (OHM), a wholly owned subsidiary of OHM Corporation, has prepared this air sampling plan for use near the stabilization facilities operated by OHM in Granite City, Illinois. This air sampling plan describes the methods and procedures to be employed when air samples are collected. Air samples will be collected during stabilization work in the contaminated areas of the site.

This document is intended to provide guidelines for the air sampling, the analysis of the samples, and the reduction of the data.

This plan also states the guidelines to be utilized to collect and analyze the air samples as well as identify key personnel in the implementation of the program.

2.1 SITE HISTORY

The NL Site includes the NL Industries/Taracorp Plant, a former secondary lead smelting operation located at 16th Street and Cleveland Boulevard in Granite City, Illinois. Prior to 1903, the plant included various smelting related equipment and processes. From 1903 to 1983, secondary lead smelting occurred on site. These activities were discontinued during 1983 and equipment dismantled.

In July 1981, St. Louis Lead Recyclers, Inc. (SLLR) began using equipment on adjacent property owned by Trust 454 to separate components of the Taracorp waste pile. The objective was to recycle lead bearing materials to the furnaces at Taracorp and send hard rubber off site for recycling. SLLR continued operations until March 1983 when it shut down its equipment. Residuals from the operation remain on Trust 454 property as does some equipment.

A State Implementation Plan for Granite City, Illinois, was published in September 1983 by the Illinois Environmental Protection Agency (IEPA). The IEPA's report indicated that the lead nonattainment problem for air emissions in Granite City, Illinois, was in large part due to emissions associated with the operation of the secondary lead smelter operated by Taracorp and lead reclamation activities conducted by SLLR. The IEPA procured Administrative Orders by Consent with Taracorp, SLLR, Stackorp, Inc., Tri-City Truck Plaza, Inc., and Trust 454 during March 1984. The orders required the implementation of remedial activities relative to air quality.

NL Industries, as former owner of the site, voluntarily entered into an Agreement and Administrative Order by Consent with the United States Environmental Protection Agency (USEPA) and IEPA in May 1985 to implement a Remedial Investigation/Feasibility Study (RI/FS) for the location and other potentially affected areas. Taracorp was not a party to the agreement due to the fact that it filed for bankruptcy. The USEPA determined that the location was a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) facility, and it was placed on the National Priorities List on June 10, 1986.

2.2 DESCRIPTION

This action requires the excavation, treatment, and disposal of fill material placed in alleys, parking lots, driveways, and yards in residential communities. The communities include Granite City, Madison, and Venice, Illinois. The Record of Decision (ROD) established the action levels for this project at 500 parts per million (ppm) of lead for residential areas and visibly clean for driveways, alleys, etc. Following the removal of the contaminated material, the impacted areas will be restored. This restoration will include sodding the yards and placing rock on or paving the alleys, driveways, and parking lots.

3.1 PROJECT MANAGEMENT PERSONNEL

The project management support team for the contract includes a project manager, a site supervisor, a contracts administrator, and the project staff. The project management team provides a single point of contact within OHM for the United States Army Corps of Engineers (USACE) contracting officer and technical staff. The team will implement the activities specified in the project Quality Assurance Project Plan (QAPP). The project management team will verify that the air sampling program is implemented as described in this plan and that sample results are distributed to USACE in a timely fashion. It is the responsibility of the project management team to implement the quality practices established in this Air Sampling Plan.

3.2 PROJECT ORGANIZATION AND RESPONSIBILITIES

The project manager is responsible to provide the overall direction of the project executed under his supervision including the application of the air sampling program. The project manager for the Granite City project is Mr. Larry Hoffman.

The site supervisor is responsible for providing the day-to-day supervision of the assigned project including the fulfillment of the quality assurance (QA) responsibilities. The site supervisor is responsible for ensuring that the air sampling equipment is available, including the support necessary to operate the equipment. The site supervisor is responsible for reviewing the results of the air sampling program to verify that the fugitive dust emissions are below the action levels established by USACE. The site supervisor is Mr. Tom Seem.

The air sampling technician is responsible for implementing the elements of this plan including the collection and the calibration of the air sampling equipment. The air sampling technician is also responsible for summarizing the data and submitting a report to the site supervisor in a timely fashion. He is also responsible for notifying the site supervisor of nonconformances concerning the air sampling program and providing appropriate documentation to confirm that the nonconformance has been resolved. The air sampling technician is Mr. Steve Blassingame.

Air samples will be analyzed by VEC Laboratories. VEC is accredited by the American Industrial Hygiene Association to analyze industrial hygiene samples, including air samples for the presence of heavy metals. Mr. Howard Runion is the manager of the Industrial Hygiene Laboratory and will serve as the contact for the sample analysis. The address for the facility is provided below.

VEC Laboratories
4000 Technical Center Drive
Monroeville, PA 15146
(412) 825-2400

QA objectives have been established for each of the elements of the air sampling program. In this section, OHM defines the type of measurements to be collected, the uses and users of these measurements, and the QA objectives.

OHM will perform air sampling at the perimeter of the site during intrusive activities in the exclusion area and will collect air samples in the breathing zone of selected personnel who are likely to encounter airborne concentrations of lead in excess of the limits specified by the Occupational Safety and Health Administration (OSHA). Analyses to be performed with each of these activities are listed in Table 4.1.

TABLE 4.1

SUMMARY OF AIR SAMPLING ACTIVITIES

Activity	Matrix	Parameter	Methods
High Volume Perimeter Air Sample	Glass Fiber Filter	Total Lead	Modified NIOSH 7082
Personnel Air Sample	Mixed Cellulose Ester Filter	Total Lead	NIOSH 7082

The air samples collected at the perimeter of the site will be analyzed in order to confirm that fugitive emissions of total airborne lead were less than the action level specified by USACE in the original request for proposal. The personnel air samples will be used to document the concentrations of airborne lead that is encountered by the personnel working in the exclusion area.

The background concentration of airborne lead will be confirmed before intrusive work in the exclusion zone begins. The high volume air sampler will be operated at selected locations around the site for approximately 24 hours. The background concentration of airborne lead will be calculated using the arithmetic average of the available results.

The action levels for each of these criteria are listed in Table 4.2.

TABLE 4.2

ACTION LEVELS

Activity	Parameter	Method	Action Level
High Volume Perimeter Air Sample	Total Lead	Modified NIOSH 7082	*1.5 $\mu g/m^3$ (micrograms per cubic meter) mean for calendar quarter 7 $\mu g/m^3$ daily (24 hour sample)
Personnel Air Sample	Total Lead	NIOSH 7082	0.05 (milligrams per cubic meter [mg/m^3])

*This action level is based on the Federal Environmental Protection Agency National Ambient Air Quality Standard (NAAQS) for total lead, as specified by 40 CFR 50.12. This standard is based on an arithmetic average over a 90 day period.

The value, 7 $\mu g/m^3$, is an action level for any single day, and is based on the hours worked by personnel (see Equation 1 below) to ensure compliance with NAAQS (which is based on a 90 day period).

Equation 1: Action Level (7 $\mu g/m^3$) =

$$\frac{(1.5\ \mu g/m^3\ \textit{for the quarter})}{(5\ \textit{days operation/7 days per week})\ (8\ \textit{hours operation per day/24 hours per day})}$$

If a single sample exceeds 7 $\mu g/m^3$, work activities will be evaluated to identify the source of emission and appropriate dust control measures shall be instituted. It is important to note that a single air sample found to be in excess of 1.5 $\mu g/m^3$ is not in violation of the EPA standard.

There are no provisions to prepare a spike sample for the air sampling program. The accuracy and precision of the analysis is based on the method.

OHM will measure the presence of contamination on sampling equipment by submitting a blank mixed cellulose ester (MCE) filter with each batch of personnel samples. The sampling equipment will be decontaminated before sampling begins and in between sampling events. The sample technician will use sample gloves to minimize the spread of contamination from the sample to equipment and to minimize cross contamination.

Air samples will be collected around the perimeter of the exclusion area during the course of this project. The samples will be collected using a high volume air pump, equivalent to a GMW 2000-H. The pump is enclosed in weatherproof housing with the sample being collected approximately 4 feet from the surface of the ground. The suspended dust will be collected on a borosilicate filter, approximately 80 square inches (in^2) in area.

Personnel air samples will be collected using a battery-operated sample pump, equivalent to a Dupont Alpha 1. The pump is attached to an individual and worn during the work performed in the exclusion area. The suspended dust is collected on a 37-millimeter MCE filter which is positioned in the breathing zone of the individual.

The high volume air samples will be collected from the perimeter of the exclusion zone. The locations of the pumps will be selected at the beginning of the project and will position the four pumps on each side of the perimeter surrounding the stabilization area. The positions of the pumps will be documented on a site map. The high volume samples will be exchanged each 24-hour period that intrusive work is performed in the exclusion zone.

One of the downwind samples will be submitted to the laboratory for analysis, representing each day where intrusive work is performed in the exclusion zone. The remaining three samples will be archived by the OHM field laboratory. The remaining three samples will be analyzed in any event where the concentration is observed to be in excess of 1 percent of the action level specified in Table 4.2.

The personnel sampling pumps will be worn by persons assigned to work in the exclusion zone. A maximum of three pumps will be worn on any one day, however, the specific number will vary according to the number of people assigned to work in the exclusion zone.

The personnel samples will be exchanged at the end of the shift. The sample will run for the entire shift. The person wearing the pump will be assigned to work in the exclusion zone but may work in the support zone as is required by the job assignment. In this way, it is possible to measure the 8-hour, time weighted average exposure for that individual on that specific day. This sampling regiment is required by OSHA and is the basis for the permissible exposure limit.

The glass fiber filters will be placed in a polyethylene bag and sealed. The personnel sample will remain in the sealed sample cassette. The ends of the sample cassette will be sealed with plugs, provided by the laboratory. No preservation is required to maintain the integrity of the sample. There is no limit on the holding time for the air samples.

6.0 SAMPLE CHAIN OF CUSTODY, PACKAGING, AND TRANSPORTATION

The air sampling activities will comply with the specifications listed in Section 6.1 of the project QAPP, which concerns labeling, sample custody, and chain-of-custody records.

Samples will be properly packaged for shipment and transported to the analytical laboratory via a courier. The samples will be accompanied with a separate chain-of-custody record form showing the contents of the package. The original record will accompany the shipment, and a copy will be retained in the project files. The samples will be delivered to the sample control department at the laboratory. The chain-of-custody record form will be updated, and the samples will be prepared for analysis.

When all of the analyses have been completed and results have been accepted by USACE, all data sheets, chain-of-custody record forms and laboratory records will be archived as part of the permanent documentation. Samples will also be retained after analyses are completed. These samples may be disposed of only when USACE permits or at the end of the project. OHM requires that samples be retained for a minimum of 14 days after the final report has been submitted to OHM.

7.0 ANALYTICAL PROCEDURES

Air samples will be analyzed by CHEMTEX or as designated by USACE. No analysis is proposed for the field laboratory.

CHEMTEX will employ established methods for the analysis of the air samples. The methods for analysis are listed in Table 4.2. The sample collection method has been modified to use a high volume air pump instead of a low flowrate pump. The entire filter will be digested and analyzed as described in the NIOSH procedure, NIOSH 7082.

The perimeter air samples will be analyzed for the presence of total lead. The personnel samples will be analyzed for the presence of total lead.

The laboratory will analyze the filters using flame Atomic Absorption Unit. The method is capable of detecting at least 2 micrograms (μg) of lead on the high volume air sample (80 in^2 glass fiber filter). This equates to a minimum detectable concentration of less than $1x10^{-3}$ $\mu g/m^3$.

The method is capable of detecting approximately 0.1 μg of lead for the personnel samples (37-millimeter MCE filter). This equates to a minimum detectable concentration of less than 0.1 $\mu g/m^3$ of lead in the air.

8.0 CALIBRATION PROCEDURES AND FREQUENCY

The flowrate of the air being sampled by the high volume pump will be measured using a slant manometer to measure the static pressure created by the air in a calibration cylinder. The static pressure is recorded in inches of water. The flowrate is determined by a calibration curve provided by the manufacturer, converting the static pressure to a flowrate in cubic feet per minute. The calibration using this primary standard is performed at the beginning of each sampling period.

The flowrate is monitored by a rotameter which is connected to the pump. The rotameter is a secondary standard and is suitable to identify significant changes in the flowrate during the sample period. The results of the rotameter are recorded periodically, at least four times during each shift.

The flowrate of the air being sampled by the personnel pumps will be measured using a primary standard, equivalent to a Gillian Gillabrator. The calibration instrument uses a frictionless piston to measure the volume of air displaced in a specific period of time. The instrument calculates the flowrate in liters of air per minute. The flowrate is measured at the beginning of the sampling period and at the end of the sampling period. The average flowrate is calculated by arithmetic average of the beginning and ending flowrate.

The average flowrate is used to calculate the total volume of air sampled. The flowrate multiplied by the time elapsed represents the total volume of air. The calculated volume of air is provided to the laboratory in order to calculate the average concentration of the contaminant.

The laboratory will calculate the average concentration of the desired contaminants for both the perimeter samples and the personnel samples. The laboratory will submit the following information to OHM before the final report is prepared:

- Copies of the sample logs
- Copies of the extraction logs with extraction methods
- Copies of the standards logs
- Copies of the instrument logs with documentation of analytical methods, initial calibrations and continuing calibration
- All raw data generated during the analysis of samples including quality control (QC) samples
- Analytical results
- QC information which will provide percent recovery, relative percent difference, control limits, blanks analyzed, and any other quality control (QC) information which may be site specific.

The project chemist will review the above information for data quality, completeness, and validity. This information will be summarized and submitted to USACE in a report. The original data will be made available to USACE upon request.

10.0 PERFORMANCE AND SYSTEMS AUDITS

The air sampling program will meet all of the requirements specified in the project QAPP, Section 10, concerning performance and system audits.

11.0 PREVENTATIVE MAINTENANCE

No preventive maintenance is recommended by the manufacturer for the operation of the air sampling equipment. Repairs and maintenance must be performed by the manufacturer.

12.0 CORRECTIVE ACTION

The air sampling program will meet all of the requirements specified in the project QAPP, Section 12, concerning the implementation of corrective actions.

13.0 QUALITY ASSURANCE REPORTS TO MANAGEMENT

The air sampling program will meet all of the requirements specified in the project QAPP, Section 13, concerning reports to management concerning problems and the resolution of problems.

APPENDIX C

OHM'S INTERPRETATION OF THE RELEVANCE OF IEPA RCRA PART B PERMIT APPLICATION DECISION GUIDE

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
A. Part A Application	Not Applicable
B. Facility Description	
B-1	Included in Work Plan
B-2	Included in Work Plan
B-2a	Included in Work Plan
B-2b	Not Applicable
B-3a	Included in Work Plan
B-3b	Included in Work Plan
B-3b(1)	Not Applicable
B-3b(1)(a)	Not Applicable
B-3b(1)(b)	Not Applicable
B-3b(2)	Not Applicable
B-3b(3)	Not Applicable
B-3c	Not Applicable
B-4	Included in Work Plan
B-5	Included in Work Plan
C. Waste Characteristics	
C-1	Will be provided before stabilization
C-1a	Not Applicable
C-1b	Not Applicable
C-1c	Not Applicable
C-1d	Not Applicable
C-1e	Not Applicable
C-1f	Not Applicable
C-2	Included in CSAP
C-2a	Included in CSAP
C-2b	Included in CSAP
C-2c	Included in CSAP
C-2d	Included in CSAP

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
C-2e	Included in CSAP
C-2f	Included in CSAP
C-2g	Will be provided in Work Plan
C-3	Included in CSAP
D. Process Information	
D-1	Not Applicable
D-1a	Not Applicable
D-1a(1)	Not Applicable
D-1a(2)	Not Applicable
D-1a(3)	Not Applicable
D-1a(3)(a)	Not Applicable
D-1a(3)(b)	Not Applicable
D-1a(3)(c)	Not Applicable
D-1a(3)(d)	Not Applicable
D-1a(3)(e)	Not Applicable
D-1b	Not Applicable
D-1b(1)	Not Applicable
D-1b(2)	Not Applicable
D-1b(3)	Not Applicable
D-1b(4)	Not Applicable
D-2	Included in Work Plan
D-2a	Included in Work Plan
D-2a(1)	Included in Work Plan
D-2a(2)	Included in Work Plan
D-2b	Not Applicable
D-2b(1)	Not Applicable
D-2b(2)	Not Applicable
D-2b(3)	Not Applicable
D-2c	Not Applicable
D-2d	Not Applicable

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
D-2e	Not Applicable
D-2f	Not Applicable
D-2f(1)	Not Applicable
D-2f(1)(a)	Not Applicable
D-2f(1)(b)	Included in Work Plan
D-2f(1)(c)	Not Applicable
D-2f(1)(d)	Not Applicable
D-2f(2)	Not Applicable
D-2f(3)	Not Applicable
D-2f(3)(a)	Not Applicable
D-2f(3)(b)	Not Applicable
D-2f(3)(c)	Not Applicable
D-2g	Not Applicable
D-3	Included in Work Plan
D-3a	Included in Work Plan
D-3b	Included in Work Plan
D-3b(1)	Included in Work Plan
D-3b(1)(a)	Included in Work Plan
D-3b(1)(b)	Included in Work Plan
D-3b(1)(c)	Included in Work Plan
D-3b(1)(d)	Included in Work Plan
D-3b(1)(e)	Included in Work Plan
D-3b(2)	Not Applicable
D-3c	Included in Work Plan
D-3c(1)	Included in Work Plan
D-3c(2)	Not Applicable
D-3c(3)	Not Applicable
D-3c(4)	Not Applicable
D-3c(5)	Not Applicable
D-3c(6)	Not Applicable

D-3c(7)	Not Applicable
D-3c(7)(a)	Not Applicable
D-3c(7)(b)	Not Applicable
D-3c(7)(c)	Not Applicable
D-3c(8)	Not Applicable
D-3c(9)	Not Applicable
D-3c(10)	Not Applicable
D-3d	Not Applicable
D-3d(1)	Not Applicable
D-3d(2)	Not Applicable
D-3d(3)	Not Applicable
D-3d(4)	Not Applicable
D-3d(4)(a)	Not Applicable
D-3d(4)(b)	Not Applicable
D-3d(4)(c)	Not Applicable
D-3d(4)(d)	Not Applicable
D-3d(5)	Not Applicable
D-3d(6)	Not Applicable
D-3e	Included in Work Plan
D-3e(1)	Not Applicable
D-3e(2)	Not Applicable
D-3e(3)	Not Applicable
D-3e(4)	Not Applicable
D-3e(5)	Not Applicable
D-3e(6)	Not Applicable
D-3f	Not Applicable
D-3f(1)	Not Applicable
D-3f(2)	Not Applicable
D-3f(3)	Not Applicable
D-3f(4)	Not Applicable

D-3g	Not Applicable
D-3g(1)	Not Applicable
D-3g(2)	Not Applicable
D-3g(3)	Not Applicable
D-3g(4)	Not Applicable
D-3h	Not Applicable
D-3i	Not Applicable
D-3j	Included in Work Plan
D-3j(1)	Included in Work Plan
D-3j(2)	Included in Work Plan
D-3j(3)	Not Applicable
D-3j(4)	Not Applicable
D-3j(5)	Not Applicable
D-3j(6)	Not Applicable
D-3j(7)	Not Applicable
D-3k	Not Applicable
D-3k(1)	Not Applicable
D-3k(2)	Not Applicable
D-3k(3)	Not Applicable
D-3l	Not Applicable
D-3l(1)	Not Applicable
D-3l(2)	Not Applicable
D-3l(3)	Not Applicable
D-3l(4)	Not Applicable
D-4	Not Applicable
D-4a	Not Applicable
D-4b	Not Applicable
D-4b(1)	Not Applicable
D-4b(2)	Not Applicable
D-4c	Not Applicable

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
D-4c(1)	Not Applicable
D-4c(2)	Not Applicable
D-4c(3)	Not Applicable
D-4c(4)	Not Applicable
D-4c(5)	Not Applicable
D-4d	Not Applicable
D-4d(1)	Not Applicable
D-4d(2)	Not Applicable
D-4d(3)	Not Applicable
D-4d(4)	Not Applicable
D-4d(4)(a)	Not Applicable
D-4d(4)(b)	Not Applicable
D-4d(4)(c)	Not Applicable
D-4e	Not Applicable
D-4e(1)	Not Applicable
D-4e(1)(a)	Not Applicable
D-4e(1)(b)	Not Applicable
D-4e(1)(c)	Not Applicable
D-4e(2)	Not Applicable
D-4e(2)(a)	Not Applicable
D-4e(2)(b)	Not Applicable
D-4e(2)(c)	Not Applicable
D-4e(2)(d)	Not Applicable
D-4f	Not Applicable
D-4f(1)	Not Applicable
D-4f(2)	Not Applicable
D-4f(3)	Not Applicable
D-4f(4)	Not Applicable
D-4f(5)	Not Applicable
D-4f(5)(a)	Not Applicable

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
D-4f(5)(b)	Not Applicable
D-4f(6)	Not Applicable
D-4g	Not Applicable
D-4g(1)	Not Applicable
D-4g(1)(a)	Not Applicable
D-4g(1)(b)	Not Applicable
D-4g(1)(c)	Not Applicable
D-4g(2)	Not Applicable
D-4g(2)(a)	Not Applicable
D-4g(2)(b)	Not Applicable
D-4g(2)(c)	Not Applicable
D-4g(2)(d)	Not Applicable
D-4g(3)	Not Applicable
D-4g(4)	Not Applicable
D-4g(5)	Not Applicable
D-4h	Not Applicable
D-4h(1)	Not Applicable
D-4h(2)	Not Applicable
D-4h(3)	Not Applicable
D-4h(4)	Not Applicable
D-4h(5)	Not Applicable
D-4i	Not Applicable
D-4i(1)	Not Applicable
D-4i(2)	Not Applicable
D-4i(3)	Not Applicable
D-4i(4)	Not Applicable
D-4i(5)	Not Applicable
D-4i(6)	Not Applicable
D-4i(7)	Not Applicable
D-4i(8)	Not Applicable

D-4j	Not Applicable
D-4j(1)	Not Applicable
D-4j(2)	Not Applicable
D-4j(3)	Not Applicable
D-4j(4)	Not Applicable
D-5	Not Applicable
D-5a	Not Applicable
D-5b	Not Applicable
D-5b(1)	Not Applicable
D-5b(2)	Not Applicable
D-5b(2)(a)	Not Applicable
D-5b(2)(b)	Not Applicable
D-5b(2)(c)	Not Applicable
D-5b(2)(d)	Not Applicable
D-5b(2)(e)	Not Applicable
D-5b(2)(f)	Not Applicable
D-5b(2)(g)	Not Applicable
D-5c	Not Applicable
D-5c(1)	Not Applicable
D-5c(2)	Not Applicable
D-5c(3)	Not Applicable
D-5c(4)	Not Applicable
D-5c(4)(a)	Not Applicable
D-5c(4)(b)	Not Applicable
D-5d	Not Applicable
D-6	Not Applicable
D-6a	Not Applicable
D-6b	Not Applicable
D-6b(1)	Not Applicable
D-6b(2)	Not Applicable

D-6b(3)	Not Applicable
D-6b(4)	Not Applicable
D-6b(4)(a)	Not Applicable
D-6b(4)(b)	Not Applicable
D-6b(4)(c)	Not Applicable
D-6b(4)(d)	Not Applicable
D-6b(4)(e)	Not Applicable
D-6b(4)(f)	Not Applicable
D-6b(4)(g)	Not Applicable
D-6c	Not Applicable
D-6c(1)	Not Applicable
D-6c(2)	Not Applicable
D-6c(3)	Not Applicable
D-6c(4)	Not Applicable
D-6c(5)	Not Applicable
D-6d	Not Applicable
D-6d(1)	Not Applicable
D-6d(2)	Not Applicable
D-6d(3)	Not Applicable
D-6d(4)	Not Applicable
D-6d(4)(a)	Not Applicable
D-6d(4)(b)	Not Applicable
D-6d(4)(c)	Not Applicable
D-6d(4)(d)	Not Applicable
D-6e	Not Applicable
D-6e(1)	Not Applicable
D-6e(1)(a)	Not Applicable
D-6e(1)(b)	Not Applicable
D-6e(1)(c)	Not Applicable
D-6e(2)	Not Applicable

D-6e(2)(a)	Not Applicable
D-6e(2)(b)	Not Applicable
D-6e(2)(c)	Not Applicable
D-6e(2)(d)	Not Applicable
D-6f	Not Applicable
D-6f(1)	Not Applicable
D-6f(2)	Not Applicable
D-6f(3)	Not Applicable
D-6f(4)	Not Applicable
D-6f(5)	Not Applicable
D-6f(6)	Not Applicable
D-6f(6)(a)	Not Applicable
D-6f(6)(b)	Not Applicable
D-6f(7)	Not Applicable
D-6g	Not Applicable
D-6g(1)	Not Applicable
D-6g(1)(a)	Not Applicable
D-6g(1)(b)	Not Applicable
D-6g(1)(c)	Not Applicable
D-6g(2)	Not Applicable
D-6g(2)(a)	Not Applicable
D-6g(2)(b)	Not Applicable
D-6g(2)(c)	Not Applicable
D-6g(2)(d)	Not Applicable
D-6g(3)	Not Applicable
D-6g(4)	Not Applicable
D-6g(5)	Not Applicable
D-6h	Not Applicable
D-6h(1)	Not Applicable
D-6h(1)(a)	Not Applicable

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
D-6h(1)(b)	Not Applicable
D-6h(2)	Not Applicable
D-6h(2)(a)	Not Applicable
D-6h(2)(b)	Not Applicable
D-6h(3)	Not Applicable
D-6h(4)	Not Applicable
D-6h(5)	Not Applicable
D-6i	Not Applicable
D-6j	Not Applicable
D-6j(1)	Not Applicable
D-6j(2)	Not Applicable
D-6j(3)	Not Applicable
D-6j(4)	Not Applicable
D-6j(5)	Not Applicable
D-6j(5)(a)	Not Applicable
D-6j(5)(b)	Not Applicable
D-6j(5)(c)	Not Applicable
D-6j(5)(d)	Not Applicable
D-6j(5)(e)	Not Applicable
D-6k	Not Applicable
D-6l	Not Applicable
D-6l(1)	Not Applicable
D-6l(2)	Not Applicable
D-6l(3)	Not Applicable
D-6l(4)	Not Applicable
D-7	Not Applicable
D-7a	Not Applicable
D-7a(1)	Not Applicable
D-7a(2)	Not Applicable
D-7a(2)(a)	Not Applicable

D-7a(2)(b)	Not Applicable
D-7a(3)	Not Applicable
D-7a(3)(a)	Not Applicable
D-7a(3)(b)	Not Applicable
D-7a(3)(c)	Not Applicable
D-7b	Not Applicable
D-7b(1)	Not Applicable
D-7b(2)	Not Applicable
D-7b(2)(a)	Not Applicable
D-7b(2)(b)	Not Applicable
D-7b(2)(c)	Not Applicable
D-7b(2)(d)	Not Applicable
D-7b(2)(e)	Not Applicable
D-7c	Not Applicable
D-7c(1)	Not Applicable
D-7c(1)(a)	Not Applicable
D-7c(1)(b)	Not Applicable
D-7c(1)(c)	Not Applicable
D-7c(1)(d)	Not Applicable
D-7c(1)(e)	Not Applicable
D-7c(1)(f)	Not Applicable
D-7c(1)(g)	Not Applicable
D-7c(1)(h)	Not Applicable
D-7c(1)(i)	Not Applicable
D-7c(1)(j)	Not Applicable
D-7c(2)(a)	Not Applicable
D-7c(2)(b)	Not Applicable
D-7c(2)(c)	Not Applicable
D-7c(2)(d)	Not Applicable
D-7c(2)(e)	Not Applicable

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
D-7c(2)(f)	Not Applicable
D-7c(2)(g)	Not Applicable
D-7c(2)(h)	Not Applicable
D-7c(2)(i)	Not Applicable
D-7d	Not Applicable
D-7d(1)	Not Applicable
D-7d(2)	Not Applicable
D-7d(3)	Not Applicable
D-7d(4)	Not Applicable
D-7d(5)	Not Applicable
D-7e	Not Applicable
D-7e(1)	Not Applicable
D-7e(2)	Not Applicable
D-7e(3)	Not Applicable
D-7e(4)	Not Applicable
D-7e(5)	Not Applicable
D-7f	Not Applicable
D-7f(1)	Not Applicable
D-7f(1)(a)	Not Applicable
D-7f(1)(b)	Not Applicable
D-7f(2)	Not Applicable
D-7f(2)(a)	Not Applicable
D-7f(2)(b)	Not Applicable
D-7g	Not Applicable
D-7g(1)	Not Applicable
D-7g(2)	Not Applicable
D-7g(3)	Not Applicable
D-7g(4)	Not Applicable
D-7h	Not Applicable
D-8	Not Applicable

D-8a	Not Applicable
D-8b	Not Applicable
D-8c	Not Applicable
E. Groundwater Monitoring	
E-1	Not Applicable
E-1a	Included in Work Plan
E-1b	Not Applicable
E-1c	Not Applicable
E-2	Not Applicable
E-2a	Not Applicable
E-2b	Not Applicable
E-2c	Not Applicable
E-2d	Not Applicable
E-2e	Not Applicable
E-3	Not Applicable
E-4	Not Applicable
E-5	Not Applicable
E-6	Not Applicable
E-6a	Not Applicable
E-6b	Not Applicable
E-6c	Not Applicable
E-6d	Not Applicable
E-6d(1)	Not Applicable
E-6d(2)	Not Applicable
E-6d(3)	Not Applicable
E-6d(4)	Not Applicable
E-6d(5)	Not Applicable
E-7	Not Applicable
E-7a	Not Applicable
E-7b	Not Applicable

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
E-7c	Not Applicable
E-7d	Not Applicable
E-7e	Not Applicable
E-8	Not Applicable
E-8a	Not Applicable
E-8a(1)	Not Applicable
E-8a(2)	Not Applicable
E-8a(3)	Not Applicable
E-8a(4)	Not Applicable
E-8a(5)	Not Applicable
E-8a(5)(i)	Not Applicable
E-8a(5)(ii)	Not Applicable
E-8a(6)	Not Applicable
E-8a(7)	Not Applicable
E-8a(8)	Not Applicable
E-9	Not Applicable
E-9a	Not Applicable
E-9b	Not Applicable
E-9c	Not Applicable
E-9c(1)	Not Applicable
E-9c(2)	Not Applicable
E-9d	Not Applicable
E-9d(1)	Not Applicable
E-9d(2)	Not Applicable
E-9d(3)	Not Applicable
E-9d(4)	Not Applicable
E-9d(5)	Not Applicable
E-9d(6)	Not Applicable
E-9d(7)	Not Applicable
E-9d(8)	Not Applicable

E-9d(9)	Not Applicable
E-9e	Not Applicable
E-9e(1)	Not Applicable
E-9e(2)	Not Applicable
E-9e(3)	Not Applicable
E-9e(4)	Not Applicable
E-10	Not Applicable
F. Procedures to Prevent Hazards	
F-1	Not Applicable
F-1a	Included in Work Plan
F-1a(1)	Included in Work Plan
F-1a(2)	Included in Work Plan
F-1a(2)(a)	Not Applicable
F-1a(2)(b)	Not Applicable
F-1a(3)	Included in Work Plan
F-1b	Not Applicable
F-1b(1)	Not Applicable
F-1b(2)	Not Applicable
F-2	Not Applicable
F-2a	Included in Work Plan
F-2a(1)	Included in Work Plan
F-2a(2)	Included in Work Plan
F-2b	Included in Work Plan
F-2b(1)	Not Applicable
F-2b(2)	Included in Work Plan
F-2b(2)(a)	Not Applicable
F-2b(2)(b)	Not Applicable
F-2b(2)(c)	Not Applicable
F-2b(2)(d)	Not Applicable
F-2b(2)(e)	Not Applicable

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
F-2b(2)(f)	Not Applicable
F-2b(4)	Not Applicable
F-2b(4)(a)	Not Applicable
F-2b(4)(b)	Included in Work Plan
F-2b(4)(c)	Included in Work Plan
F-2b(4)(d)	Not Applicable
F-2b(5)	Not Applicable
F-2b(5)(a)	Not Applicable
F-2b(5)(a)(1)	Not Applicable
F-2b(5)(a)(2)	Not Applicable
F-2b(5)(a)(3)	Not Applicable
F-2b(5)(a)(4)	Not Applicable
F-2b(5)(b)	Not Applicable
F-2b(6)	Not Applicable
F-2b(6)(a)	Not Applicable
F-2b(6)(b)	Not Applicable
F-2b(7)	Not Applicable
F-2b(7)(a)	Not Applicable
F-2b(7)(b)	Not Applicable
F-2b(7)(c)	Not Applicable
F-2b(7)(d)	Not Applicable
F-2b(8)	Not Applicable
F-2b(8)(a)	Not Applicable
F-2b(8)(b)	Not Applicable
F-3	Included in Work Plan
F-3a	Included in Work Plan
F-3a(1)	Included in Work Plan
F-3a(2)	Included in Work Plan
F-3a(3)	Included in Work Plan
F-3a(4)	Included in Work Plan

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
F-3b	Not Applicable
F-4	Included in Work Plan
F-4a	Included in Work Plan
F-4b	Included in Work Plan
F-4c	Included in Work Plan
F-4d	Included in Work Plan
F-4e	Included in SSHP
F-5	Not Applicable
F-5a	Not Applicable
F-5b	Not Applicable
F-5c	Not Applicable
F-5d	Not Applicable
F-5e	Not Applicable
F-5f	Not Applicable
F-5g	Not Applicable
F-5h	Not Applicable
F-5i	Not Applicable
F-5j	Not Applicable
F-5k	Not Applicable
F-5l	Not Applicable
F-5m	Not Applicable
F-5n	Not Applicable
G. Contingency Plan	
G-1	Included in SSHP
G-2	Included in SSHP
G-3	Included in SSHP
G-4	Included in SSHP
G-4a	Included in SSHP
G-4b	Included in SSHP
G-4c	Included in SSHP

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
G-4d	Included in SSHP
G-4e	Included in SSHP
G-4f	Included in SSHP
G-4g	Not Applicable
G-4h	Included in SSHP
G-4i	Not Applicable
G-4j(1)	Not Applicable
G-4j(2)	Not Applicable
G-4k	Not Applicable
G-4l	Not Applicable
G-4l(1)	Not Applicable
G-4l(1)(a)	Not Applicable
G-4l(1)(b)	Not Applicable
G-4l(1)(c)	Not Applicable
G-4l(1)(d)	Not Applicable
G-4l(1)(e)	Not Applicable
G-4l(1)(f)	Not Applicable
G-4l(2)	Not Applicable
G-4l(3)	Not Applicable
G-4l(3)(a)	Not Applicable
G-4l(3)(b)	Not Applicable
G-4m	Not Applicable
G-4n	Not Applicable
G-5	Included in SSHP
G-6	Included in SSHP
G-7	Included in SSHP
G-8	Included in SSHP
H. Personnel Training	
H-1	Included in SSHP
H-1a	Included in SSHP

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
H-1b	Included in SSHP
H-1c	Included in SSHP
H-1d	Included in SSHP
H-1e	Included in SSHP
H-2	Included in SSHP
I. Closure and Post-Closure Requirements	
I-1	Included in Work Plan
I-1a	Included in Work Plan
I-1b	Included in Work Plan
I-1c	Included in Work Plan
I-1d	Included in Work Plan
I-1d(1)	Not Applicable
I-1d(2)	Included in Work Plan
I-1d(3)	Included in Work Plan
I-1d(4)	Not Applicable
I-1d(5)	Not Applicable
I-1d(6)	Not Applicable
I-1d(6)(a)	Not Applicable
I-1d(6)(b)	Not Applicable
I-1e	Not Applicable
I-1e(1)	Not Applicable
I-1e(1)(a)	Not Applicable
I-1e(1)(b)	Not Applicable
I-1e(2)	Not Applicable
I-1e(3)	Not Applicable
I-1e(4)	Not Applicable
I-1e(5)	Not Applicable
I-1e(6)	Not Applicable
I-1e(7)	Not Applicable
I-1e(8)	Not Applicable

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
I-1f	Not Applicable
I-1g	Not Applicable
I-2	Not Applicable
I-2a	Not Applicable
I-2b	Not Applicable
I-2c	Not Applicable
I-2d	Not Applicable
I-3	Not Applicable
I-4	Not Applicable
I-5	Not Applicable
I-5a	Not Applicable
I-5b	Not Applicable
I-5b(1)	Not Applicable
I-5b(2)	Not Applicable
I-5c	Not Applicable
I-5d	Not Applicable
I-5e	Not Applicable
I-5f	Not Applicable
I-5g	Not Applicable
I-6	Not Applicable
I-7	Not Applicable
I-7a	Not Applicable
I-7b	Not Applicable
I-7b(1)	Not Applicable
I-7b(2)	Not Applicable
I-7c	Not Applicable
I-7d	Not Applicable
I-7e	Not Applicable
I-7f	Not Applicable
I-7g	Not Applicable

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
I-8	Not Applicable
I-8a	Not Applicable
I-8a(1)	Not Applicable
I-8a(2)	Not Applicable
I-8a(3)	Not Applicable
I-8b	Not Applicable
I-8b(1)	Not Applicable
I-8b(2)	Not Applicable
I-8b(3)	Not Applicable
I-8c	Not Applicable
I-9	Not Applicable
I-9a	Not Applicable
I-9b	Not Applicable
J. Other Federal Laws	Will be provided in Work Plan
K. Part B Certification	
K-1	Not Applicable
K-2	Not Applicable
K-3	Not Applicable
L. Continuing Releases at Permitted Facilities	
L-1	Not Applicable
L-1a	Not Applicable
L-1b	Not Applicable
L-2	Not Applicable
L-2a	Not Applicable
L-2b	Not Applicable
M. Research, Debelopment and Demonstration Permits RCRA	
M-1	Not Applicable
M-2	Not Applicable
M-3	Not Applicable
M-4	Not Applicable

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
M-4a	Not Applicable
M-4b	Not Applicable
M-5	Not Applicable
M-5a	Not Applicable
M-5b	Not Applicable
M-5b(1)	Not Applicable
M-5b(2)	Not Applicable
M-5b(3)	Not Applicable
M-5b(4)	Not Applicable
M-5b(5)	Not Applicable
M-5b(6)	Not Applicable
M-6	Not Applicable
M-6a	Not Applicable
M-6b	Not Applicable
M-6c	Not Applicable
M-6d	Not Applicable
M-6e	Not Applicable
M-6e(1)	Not Applicable
M-6e(2)	Not Applicable
M-6e(3)	Not Applicable
M-6e(3)(a)	Not Applicable
M-6e(3)(b)	Not Applicable
M-7	Not Applicable
M-7a	Not Applicable
M-7c	Not Applicable
M-7d	Not Applicable
M-7d(1)	Not Applicable
M-7d(2)	Not Applicable
M-7d(3)	Not Applicable
M-7d(4)	Not Applicable

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
M-7d(5)	Not Applicable
M-7d(6)	Not Applicable
M-7d(7)	Not Applicable
M-7e	Not Applicable
M-7f	Not Applicable
M-7g	Not Applicable
M-7h	Not Applicable
M-8	Not Applicable
M-8a	Not Applicable
M-8b	Not Applicable
M-8c	Not Applicable
M-8d	Not Applicable
M-8e	Not Applicable
M-8f	Not Applicable
M-9	Not Applicable
M-9a	Not Applicable
M-9b	Not Applicable
M-9c	Not Applicable
M-9d	Not Applicable
M-9e	Not Applicable
M-10	Not Applicable
M-10a	Not Applicable
M-10a(1)	Not Applicable
M-10a(2)	Not Applicable
M-10a(3)	Not Applicable
M-10a(4)	Not Applicable
M-10a(5)	Not Applicable
M-10b	Not Applicable
M-11	Not Applicable
M-11a	Not Applicable

RCRA PART B PERMIT APPLICATION DECISION GUIDE	
M-11a(1)	Not Applicable
M-11a(2)	Not Applicable
M-11a(3)	Not Applicable
M-11a(4)	Not Applicable
M-11a(4)(a)	Not Applicable
M-11a(4)(b)	Not Applicable
M-11a(4)(c)	Not Applicable
M-11a(5)	Not Applicable
M-11a(6)	Not Applicable
M-11b	Not Applicable
M-11c	Not Applicable
M-12	Not Applicable
M-12a	Not Applicable
M-12a(1)	Not Applicable
M-12a(2)	Not Applicable
M-12a(2)(a)	Not Applicable
M-12a(2)(b)	Not Applicable
M-12a(3)	Not Applicable
M-12a(4)	Not Applicable
M-12a(5)	Not Applicable
M-12a(6)	Not Applicable
M-12b	Not Applicable
M-12b(1)	Not Applicable
M-12b(1)(a)	Not Applicable
M-12b(1)(b)	Not Applicable
M-12b(2)	Not Applicable
N. Part B Certification	Not Applicable

APPENDIX D

PUGMILLING OPERATIONS

Equip Name POWERSCREEN
Equip Number 6875 Charge Code 40420

Current Project Capacity 100TPH +

Manufacturer POWERSCREEN
Model Number MARK III Serial Number

Size Horse Power 70HP. DIESEL

Power Required. UNIT IS SELF CONTAINED

Shipping Length Operating Length 52'
Shipping Width 8'6" Operating Width 8'6"
Shipping Height 13'6" Operating Height 16'6"
Weight 19,000#

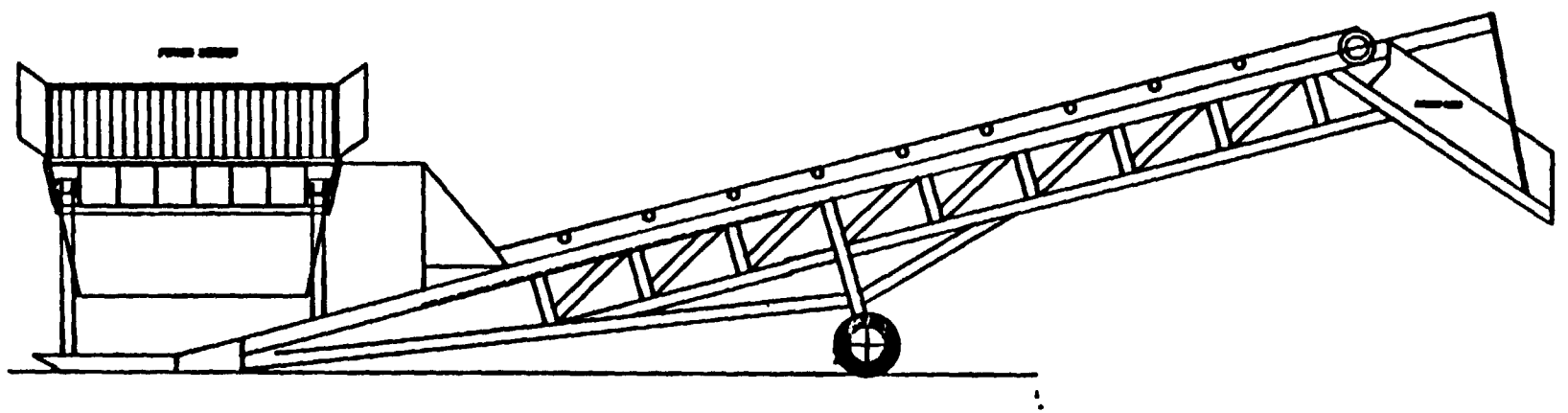
Purchase Date Notes

Vendor POWERSCREEN RENTALS INC. Rep
4050 TOWER ROAD
LOUISVILLE,KENTUCKY 40219
Phone (502)968-6168
Contact

CAUTIONS

Comments UNIT IS EQUIPPED WITH AN 8 CU.YD. FEED HOPPER WITH GRIZZLY AND SHREDDER SYSTEM. HOPPER SIZE 13'6"X 5'0"W/48" BELT DISCHARGING ONTO A 48"WIDE X 36' BELT CONVEYOR TO DOUBLE DECK SCREEN. UNIT ALSO HAS AN AUX. HYD. PORT TO DRIVE ANOTHER STACKING CONVEYOR.

AS IN ANY SCREENING OPERATION, THE THROUGH PUT OF THIS MACHINE IS DIRECTLY PROPORTIONAL TO THE BULK DENSITY AND, THE MOISTURE OF THE FEED MATERIAL.



Equip Name FEEDER BELT
Equip Number 7576 Charge Code 40157

Current Project 90190 Capacity

Manufacturer ROCK SYSTEMS INC.
Model Number Serial Number

Size 8 CU. YD. Horse Power 10

Power Required. 230/460

Shipping Length 8'3" Operating Length 8'3"
Shipping Width 8' Operating Width 8'
Shipping Height 10'3" UP Operating Height 10'3" UP
Weight

Purchase Date Notes

Vendor Rep

Phone
Contact

CAUTIONS

Comments BELT IS HYDRAULIC DRIVEN HYDRAULIC POWER IS SUPPLIED BY ON BOARD PUMP

Equip Name CONVEYOR / BELT
Equip Number 7623 Charge Code 40423

Current Project Capacity UP TO 350 TPH

Manufacturer OHIO CENTRAL STEEL
Model Number Serial Number

Size 24" X 40' Horse Power 7.5

Power Required. 460V./ 3PH 13AMP.

Shipping Length 40' Operating Length 38'
Shipping Width 8' Operating Width 8'
Shipping Height 4' Operating Height UP TO 20'
Weight 3000 #

Purchase Date 3/18/93 Notes

Vendor OHIO CENTRAL STEEL CO. Rep STEVE COHEN SALES
7001 AMERICANA PKWY. 614-866-0112
REYNOLDSBURG,OH.43068 1-800-837-3344
Phone 1-800-837-3344
Contact

CAUTIONS

Comments

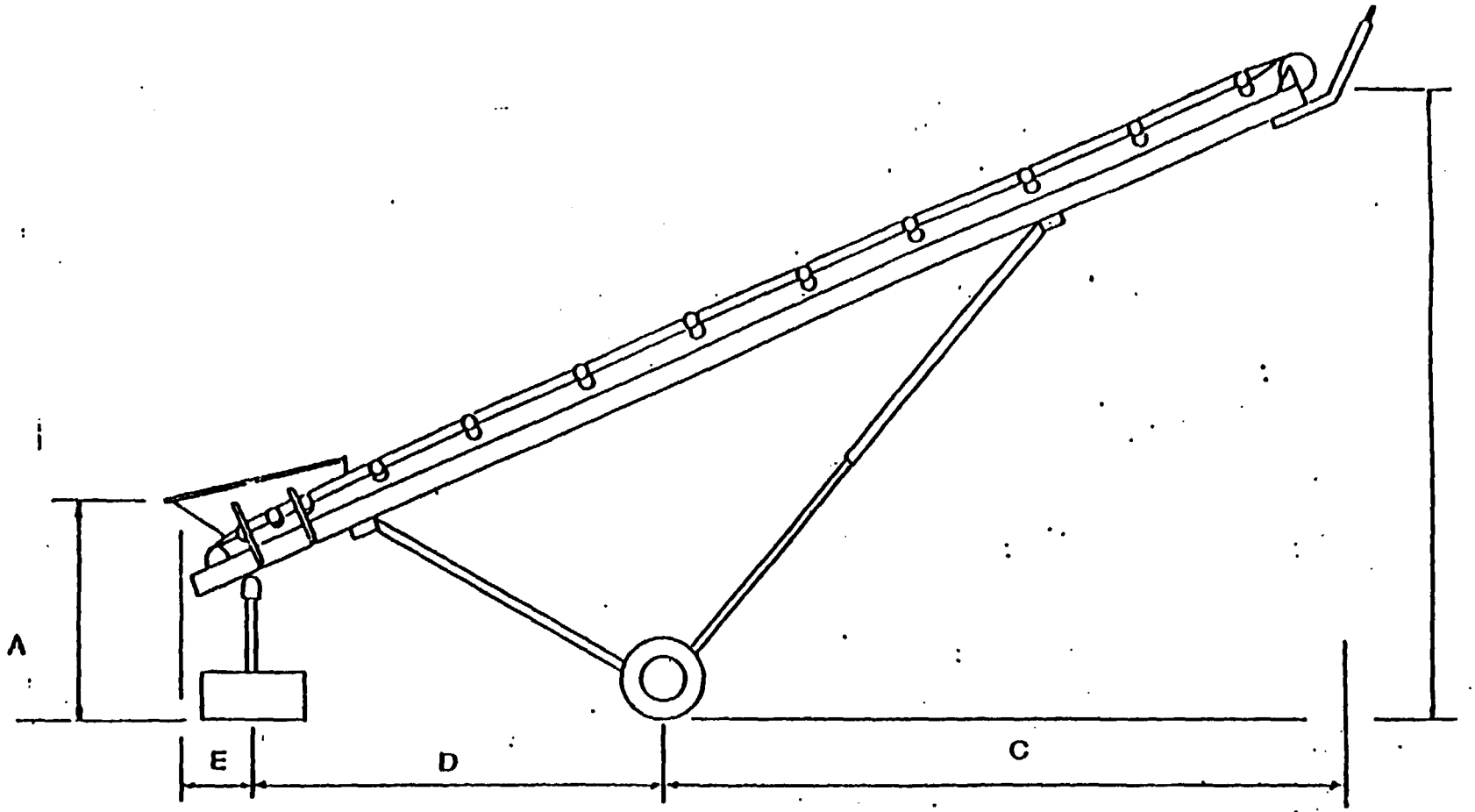


FIGURE 3-22
BELT CONVEYOR DIAGRAM

SPECIFICATIONS

	Top Position	Low Position
A	7'-6"	7'-6"
B	21'-0"	7'-0"
C	22'-6"	—
D	14'-6"	—
E	2'-0"	—

...ue to constant improvements, specifications are ...without notice. Plants in Colum-

Length: 40' Overall
Belt: 24' - 2 Ply - 1/8" Top
Head Pulley: 14¾" Lagged
Idlers - 5" - 45° Sealed
Portability - Pintle Pin Assembly
Radial Ability - Manual Rotation of Wheels
Lift - 20'-0 in up position, 15'-6 without weight box, various intermediate
Undercarriage - Can be set on ground without weight box
Raising - Hydraulic Cylinder in Hydraulic Models
Receiving Hopper - Large Enough to Accommodate Heavy Feed
Speed ... to 350'/Min.
Tonna... Up to 350 Ton/Hr. of std. wt.. Sand & Gravel

Equip Name REAGENT SILO
Equip Number 7546 Charge Code 40166

Current Project 13870 Capacity 1.5 LOADS PORTLAND-35TON

Manufacturer BELGRADE STEEL TANK CO.
Model Number Serial Number

Size 300 BARREL Horse Power 5HP.

Power Required. 460V./3PH

Shipping Length 35' 3" Operating Length 8' 6"
Shipping Width 8' 6" Operating Width 8' 6"
Shipping Height 8' 6" Operating Height 43' 3"
Weight # 5000

Purchase Date 3/18/93 Notes

Vendor BELGRADE STEEL TANK CO.
P.O. BOX 66
BELGRADE MINNISOTA 56312
Phone 612-254-8246
Contact LES THOMSON

Rep JAMES W. GARRET
EQUIPMENT CO.
RT.2 BOX 219
BERRYVILLE. ARKANSAS
72616 PHONE 501-423 2414

CAUTIONS UNIT REQUIRES TWO (2) TRUCKS TO SHIP TO SITE

Comments UNIT IS EQUIPED WITH A 14" SCREW CONVEYOR AS THE DISCHARGE MECHANISM. THE DISCHARGE IS APPROX. 14'-0" OUT FROM THE BASE OF THE SILO,AT AN ELEVATION OF APPROX. 10'-0".
SILO HAS A 225 sq.ft.BAGHOUSE REQUIRING EIGHTEEN (18) EIGHT INCH (8") BAGS. BAGS CAN BE PURCHASED THROUGH BELGRADE TANK. THE BAG MANUFACTURE CLAIMS 99.6% RECOVERY TO ONE (1) MICRON.
SILO OUTPUT IS CONTROLLED BY VARYING THE SPEED OF THE 14" SCREW. SPEED CONTROL IS DONE WITH AN ALLEN-BRADLEY 1336 FREQUENCY DRIVE WHICH IS PART OF THIS UNIT. A 5 hp. EURO-DRIVE GEAR MOTOR (MODEL NO. R-93-DT-100L4 / 20 RPM OUTPUT) POWERS THE SCREW CONVEYOR THROUGH, # 140 CHAIN AND SPROCKETS.
UNIT IS SHIPPED IN THREE (3) PIECES : SILO - 14" SCREW CONVEYOR - 8' SUPPORT BASE.
THE SILO REQUIRES APPROX. 100 CFM AIR SUPPLY @ 90 PSI. AIR SUPPLY IS FOR BAGHOUSE OPERATION AS WELL AS AIR LANCES,IN THE SILO BOTTOM

Equip Name PUGMILL
Equip Number 3738 Charge Code 40164

Current Project 7429 Capacity 40 TPH

Manufacturer OHM CORPORATION
Model Number Serial Number

Size 4'X 9' MIX BOX Horse Power 2/ 30HP

Power Required. 460 V./ 3PH. 100AMP.

Shipping Length 12'5" Operating Length 12'5"
Shipping Width 8' Operating Width 8'
Shipping Height 8' Operating Height 8'

Weight

Purchase Date Notes

Vendor Rep

Phone
Contact DAN SCHMITZ

CAUTIONS

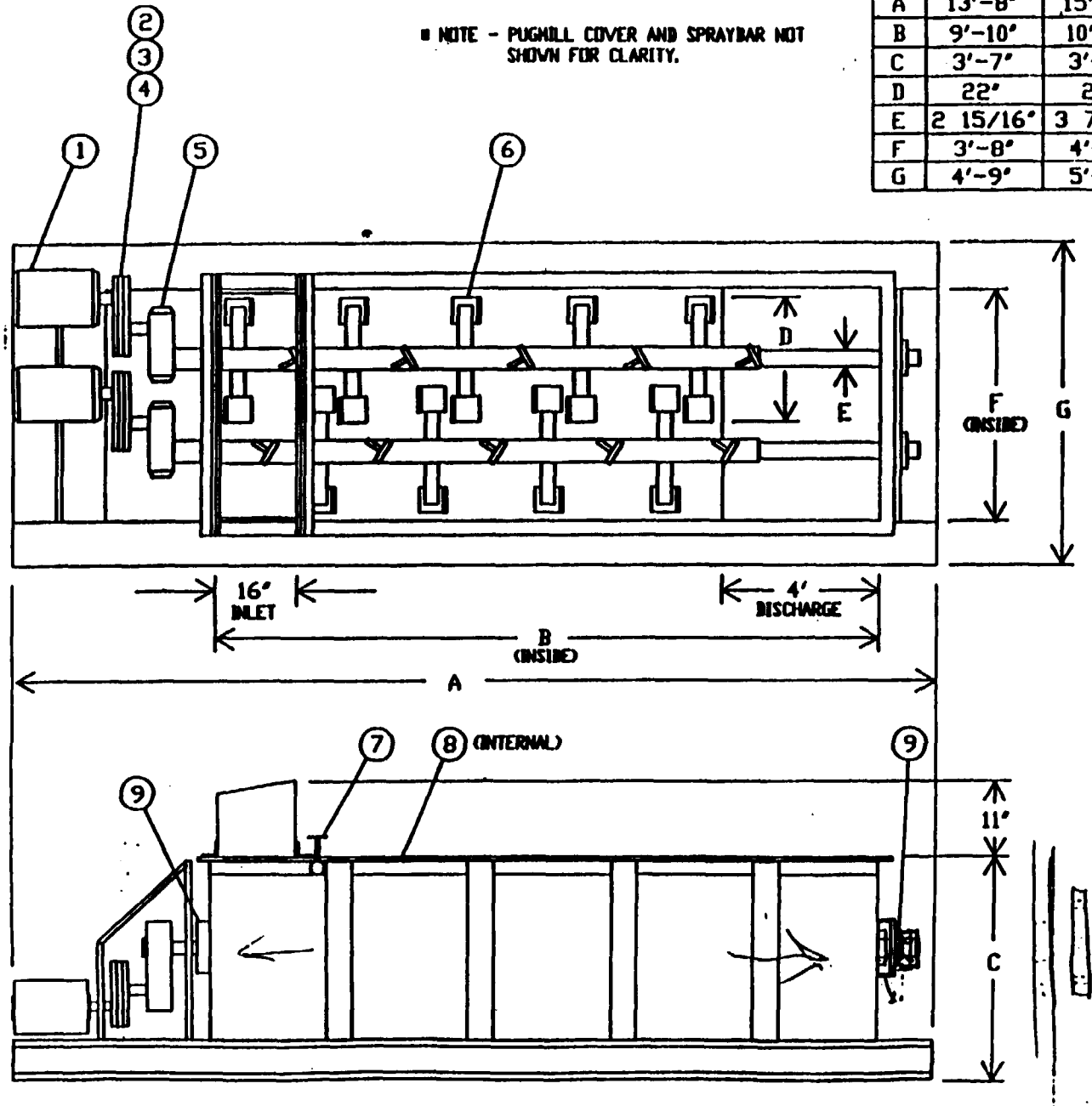
Comments SHAFT MOUNT REDUCERS WITH DODGE TRI-MATIC OVERLOAD RELEASES.
UNIT IS DESIGNED TO DISCHARGE ON TO A 40'STACKING CONVEYOR.
PUGMILL PADDLES HAVE HIGH CARBON REPLACEBLE WEAR SURFACES.
UNIT IS CAPABLE OF PROCESSING UP TO 2" DIA. MATERIAL.
*** MOTORS ARE BALDOR (CAT. NO. 4104 T) 286 T FRAME ***

AS IN ANY MIXING OPERATION,THE THROUGH PUT OF THIS MACHINE IS DIRECTLY PROPORTIONAL TO THE BULK DENSITY AND,THE MOISTURE OF THE FEED MATERIAL.

DIM.	PUGMILL MODEL				
	300	500	750	1000	1500
A	13'-8"	15'-8"	16'-10"	17'-8"	19'-9"
B	9'-10"	10'-8"	11'-8"	12'-0"	13'-6"
C	3'-7"	3'-9"	4'-0"	4'-3"	5'-1"
D	22"	24"	26"	30"	38"
E	2 15/16"	3 7/16"	3 7/16"	3 15/16"	4 15/16"
F	3'-8"	4'-2"	4'-10"	5'-6"	6'-10"
G	4'-9"	5'-5"	6'-1"	6'-8"	8'-4"

■ NOTE - ALL DIMENSIONS ROUNDED TO NEAREST INCH.

■ NOTE - PUGMILL COVER AND SPRAYBAR NOT SHOWN FOR CLARITY.



MARK	DESCRIPTION
1	MOTOR
2	MOTOR SHEAVE
3	V-BELTS
4	REDUCER SHEAVE
5	REDUCER
6	PADDLE TIPS
7	VALVE
8	SPRAY BAR
9	SHAFT BEARINGS

STUFF BOX 4.5 to 2.0

DAVIS PUGMILL
212 CEMETERY AVE.
COLUMBIA, TN. 38401
615-254-5734

TITLE: BASE | DWG # 1

Equip Name SCALE / BELT CONVEYOR
Equip Number 5679 Charge Code 43568

Current Project 7429 Capacity 200 TPH

Manufacturer RAMSEY
Model Number 10-21-1 Serial Number

Size 24". Horse Power

Power Required. 1 AMP/110 V.

Shipping Length Operating Length
Shipping Width Operating Width
Shipping Height Operating Height
Weight

Purchase Date Notes

Vendor RAMSEY TECHNOLOGY, INC Rep
501 90TH AVENUE NW
MINNEAPOLIS, MN 55433
Phone 612-783-2500 (FAX 2525)
Contact

CAUTIONS

Comments

APPENDIX E

RESULTS OF TREATABILITY STUDY

OHM Corporation

STABILIZATION TREATABILITY TESTING REPORT FOR LEAD-CONTAMINATED SOILS FROM THE NL INDUSTRIES/TARRACORP SUPERFUND SITE, MADISON COUNTY, ILLINOIS

Prepared For:

U.S. Army Corps of Engineers
Omaha, Nebraska

Prepared by:

OHM Remediation Services Corp.
Findlay, Ohio

January 5, 1994
OHM Project 13407

Treatability Testing Objective

The objective of the stabilization treatability testing on the lead-contaminated soil samples from the NL Industries/Tarracorp Superfund Site in Granite City, IL, was to verify that the contaminated soil was amenable to chemical fixation. The contaminated media under consideration is a combination of contaminated soils and battery casing fragments associated with past battery salvaging practices at the NL Industries/Tarracorp site. The primary contaminant of concern is lead.

The remediation technology tested in this treatability study is stabilization. Stabilization produces a solid of high structural integrity and reduces the hazard potential of a waste by converting the contaminants into their least soluble, mobile, or toxic form.

The objectives of the laboratory stabilization treatability testing were to:

- Evaluate the suitability of the waste material for stabilization,
- Determine the levels of reagents required for chemical fixation of the lead contamination in the waste material,
- Demonstrate compliance with anticipated regulatory requirements,
- Develop information on process design requirements for full-scale remediation.

The anticipated regulatory requirement for the remediation of the lead-contaminated soil material at the NL Industries/Tarracorp Superfund site is less than 5.0 mg/L leachable lead as measured by the TCLP.

Characterization

Two 5-gallon composite representative samples were supplied to OHM's Treatability Laboratory. The samples were thoroughly homogenized, screened through a 3/8" sieve, and characterized for the analytical parameters listed in Table 1. The purpose of the screening was to reduce the impact of large pebbles and battery casing fragments on the treatability testing results. Visually, the screening removed less than 5% of the waste material from each sample.

The characterization results indicate that the TCLP leachable lead levels are variable in the contaminated soil from the NL Industries/Tarracorp site.

Table 1. Results for Waste Characterization

Parameter	U.S. EPA SW-846 Preparation Method	U.S. EPA SW-846 Analysis Method	Result	
			Sample #1	Sample #2
TCLP Lead	1311 followed by 3020	6010	1.07 mg/L	23.8 mg/L
Bulk Density		OHM Methodology	1.78 g/cm^3	1.39 g/cm^3
Moisture Content[a]		ASTM D2216-80	28.3%	13.2%
pH		9045	7.38	7.44

[a] The moisture content was calculated on a wet weight basis

Formulation Screening

Formulations combining 200 g portions of the waste material with varying amounts of Portland cement or phosphoric acid/Portland cement were mixed according to Table 2. The phosphoric acid was added to the contaminated soil and allowed to react for 5 minutes prior to the Portland cement addition. The phosphoric acid used was reagent grade, while the Portland cement was Type 1. No water was added to facilitate mixing due to the moist nature of the contaminated soil.

After 4 hours of curing, the formulations were subjected to the TCLP procedure to determine the level of leachable lead. The final pH and leachable lead results for the TCLP testing on the screening formulations are given in Table 2 below.

Conclusions

The solubility of lead as a function of pH follows a U-shaped curve when the pH exceeds 6. Initially, as the final equilibrium pH increases, the leachable lead level decreases. This decrease is due to the formation of lead hydroxide species, which have a minimum solubility in the pH range of 8.5 to 11. However, when the final equilibrium pH exceeds ~11.5, the leachable lead level increases. The increase is due to the formation of soluble lead-hydroxy anions at these high pH values.

The role of the phosphoric acid was to broaden the pH range of minimum solubility to the range of 7.0 to 11.5.

Table 2. Screening Formulations for Stabilization Treatability Testing

Phosphoric Acid Mix Ratio[a]	Portland Cement Mix Ratio	Sample #1		Sample #2		
		TCLP Final pH	TCLP Lead (mg/L)	TCLP Final pH	TCLP Lead (mg/L)	Volume Increase (%)
–	–	5.31	1.71	5.08	23.8	–
–	0.15	7.64	<0.100[b]	7.89	<0.100	39[c]
–	0.175	10.74	<0.100	10.16	<0.100	36
–	0.20	11.46	<0.100	11.11	<0.100	36
–	0.225	11.48	<0.100	11.12	<0.100	47
–	0.25	11.16	<0.100	11.46	<0.100	48
0.02	–	5.20	<0.100	5.17	31.3	10
0.02	0.15	6.36	<0.100	6.76	<0.100	34
0.02	0.175	8.24	<0.100	9.25	<0.100	36
0.02	0.20	6.84	<0.100	9.52	<0.100	28
0.02	0.225	8.91	<0.100	10.17	<0.100	45
0.02	0.25	10.86	<0.100	9.71	<0.100	45

[a] Mix ratio = [(weight reagent)/(weight of waste)]

[b] Practical limit of quantification

[c] The volume increase is calculated by the following equation:

$$Volume\ Increase = [(\frac{Bulk\ Density\ Initial}{Bulk\ Density\ Final} \times (1 + tmr)) - 1] \times 100 \qquad (1)$$

where Bulk Density Initial is the bulk density of the waste composite, Bulk Density Final is the bulk density of the treated material, and Total Mix Ratio (TMR) is the sum of the mix ratios for Portland cement and phosphoric acid.

All the Portland cement and phosphoric acid/Portland cement formulations tried had leachable lead levels, below the practical limit of quantification, for both samples. The minimum solubility of lead in the Portland cement formulations would be governed by the lead hydroxide species. As indicated above, a pH range of 8.5 to 11 corresponds to minimum lead solubility. For the phosphoric acid/Portland cement formulations, the solubility of lead would be governed by lead phosphate species and a pH range of 7 to 11.5 corresponds to a minimum lead solubility.

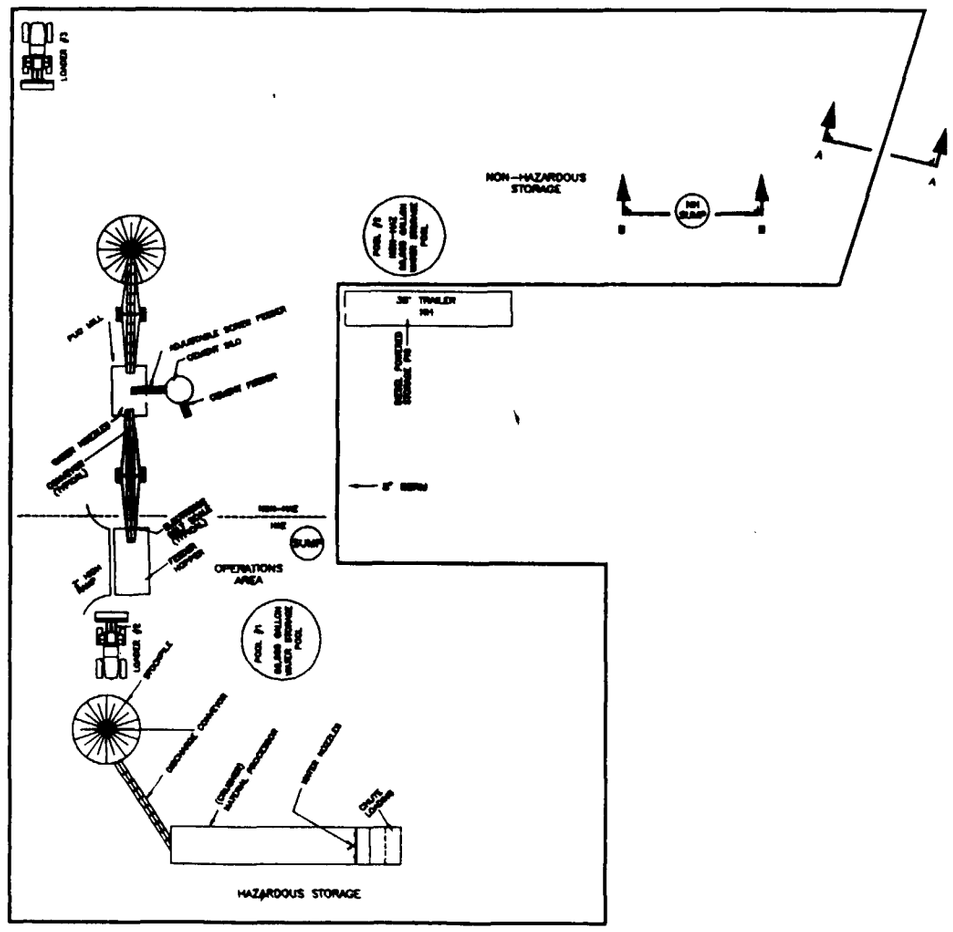
The high volume increase seen for the Sample #2 formulations appear to be due to the lower moisture content of that sample as compared to Sample #1. The formulations for Sample #2 had a dry soil-like consistency, resulting in lower bulk densities after treatment. The addition of water during treatment for the purposes of dust suppression will increase the moisture content of the treated material and increase the bulk density (and volume increase) after treatment. The volume increases listed in Table 2 should be considered as upper limits for volume increase.

The waste material represented by these soil samples appears amenable to remediation by stabilization. TCLP results reported for the stabilized formulations indicate that a 0.175 mix ratio of Portland cement formulation or a 0.02 mix ratio phosphoric acid + 0.175 mix ratio Portland cement formulation would be suitable for the immobilization of lead in the waste material from the NL Industries/Tarracorp site. These formulations had leachable lead levels below the practical limit of quantification and final TCLP extraction pH values within the range of minimum solubility.

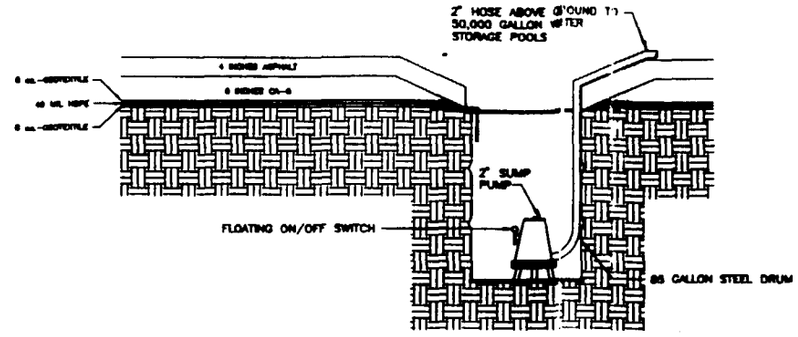
Paul R. Lear, Ph.D.
Manager, Treatability

APPENDIX F

STABILIZATION PAD CONTAINMENT SYSTEM DESIGN

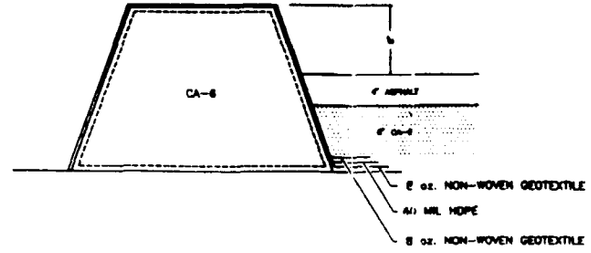


EQUIPMENT LAYOUT AND CONTAINMENT SYSTEM PLAN



SUMP DETAIL

B–B



BERM DETAIL

A–A

General Notes:

No.	Revision/Issue	Date

FIGURE 1

CONTAINMENT SYSTEM PLAN AND DETAILS

GRANITE CITY
GRANITE CITY, ILLINOIS

OHM Corporation
Findlay, Ohio

Drawn By L. BRIGGS	Checked By
Date 2-4-94	Approved By
Scale AS SHOWN	Drawing No. 19407727

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE

(Read instructions on the reverse side prior to initiating this form)

DATE: MAY 15, 1995

TRANSMITTAL NO: OHM 017-0004A

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (This section will be initiated by the contractor)

TO: MR. JAMES Mac MORRAN
U.S. ARMY CORPS OF ENGINEERS
566 DUNDEE ROAD, SUITE 1605
NORTHBROOK, ILLINOIS 60229

FROM: LARRY HOFFMAN
OHM REMEDIATION SERVICES INC.
16406 U.S. ROUTE 224E
P.O. BOX 551
FINDLAY, OHIO 45840

CONTRACT NO: DACW45-89-D-0506
D.O. # 0017

CHECK ONE:
☐ THIS IS A NEW TRANSMITTAL
☒ THIS IS A RESUBMITTAL OF TRANSMITTAL 0004

ITEM NO. a	DESCRIPTION OF ITEM SUBMITTED (Type, size, model number/etc.) b	MFG OR CONTR. CAT. CURVE DRAWING OR BROCHURE NO (See instruction no. 8) c	NO. OF COPIES d	CONTRACT REFERENCE DOCUMENT: SPEC. PARA. NO. e	CONTRACT REFERENCE DOCUMENT: DRAWING SHEET NO. f	FOR CONTRACTOR USE CODE g	VARIATION (See instruction No. 6) h	FOR CE USE CODE i
1	REVISED HAZARDOUS SOIL - WORK PLAN, SSHP + CDAP FINAL		2					B'

REMARKS: PLANS REVISED PER COMMENTS DATED MAY 9, 1995. HAVE ATTACHED LETTER WITH RAPID RESPONSE ACCEPTANCE OF PLANS ON PREVIOUS CONTRACT.

'APPROVED, EXCEPT AS NOTED. SEE ATTACHED COMMENTS

I certify that the above submitted items have been reviewed in detail and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

LARRY HOFFMAN
PROJECT MANAGER-OHM
Larry Hoffman
NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)

NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY: Dick L Albert
DICK L. ALBERT
Authorized Representative
of The Contracting Officer

DATE: 8 June 95

EDITION OF [illegible] IS OBSOLETE SHEET OF (Proponent: CE[illegible])

Transmittal No. 0004A
Contract No. DACW45-89-D-0506
Delivery Order No. 0017
Revised Hazardous Soil Work Plan, SSHP (Site Safety and Health Plan) and CDAP (Chemical Data Acquisition Plan) dated May 15, 1995.

Transmittal No. 0004A is approved except as noted.

Reference page 2-3 of the Scope of Work, in paragraph 2.3 entitled MOBILIZATION/DEMOBILIZATION, and your response letter dated 15 May 1995. Every effort shall be made to ensure that local personnel replace personnel on Per-Diem when possible.

Transmittal No. 0003
Contract No. DACW-45-D-0506
Delivery Order No. 0017
Draft Amended Work Plan for Hazardous Soil, SSHP (Site Safety and Health Plan) and CDAP (Chemical Data Acquisition Plan) dated March 16, 1995.

Transmittal No. 0003 is approved except as noted and resubmission is required. The Contractor shall address the following review comments:

1. The transmittal number is incorrect, see Transmittal 0003, dated October 10, 1994, please correct this transmittal number by addressing it as 0004, with the resubmission number being 0004A for the Final Work Plan for hazardous soils.

2. On page 2-3 of the Scope of Work, in paragraph 2.3 entitled MOBILIZATION/DEMOBILIZATION, the contractor states that most personnel and equipment will be mobilized from their St. Louis, Mo. Division. In discussions with our on-site representative it was found that this is not the case and that approximately fifty percent of your personnel is local. Per the contractor's plan every effort shall be made to ensure that local personnel replace personnel on Per-Diem.

3. On page 2-4 of the Scope of Work in Figure 2.1 delete the last sentence of the first paragraph, since the amount of contaminated soil cannot be estimated for the entire project.

4. The fourth and fifth paragraphs of this same Figure 2.1 states that soil delivered to the staging area shall be stockpiled, tested and stabilized by others and that the Prime Contractor will perform the perimeter air monitoring. In discussions with our on-site representative, it appears that this has been changed, therefore please revise your Scope of Work accordingly.

5. On page 2-15, paragraph 2.9 under the heading of TRANSPORTATION AND DISPOSAL, remove the sentence 'Shipment of non-hazardous waste will take approximately three weeks, depending upon the accepted landfill schedule.'

6. Upon resubmission of this transmittal please provide any and all documentation you have from the Omaha District that approves your company's CDAP, SSHP, Pug Milling operations and the Pad Design.

TRANSMITTAL OF DATA, DRAWINGS, SPECIFICATIONS, SAMPLE MATERIALS, SHOP DRAWINGS, MANUFACTURER'S CERTIFICATES OF COMPLIANCE

(Read instructions on the reverse side prior to initiating this form)

MARCH 17, 1995 | OHM017-0004 | 4 ch.

SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (This section will be initiated by the contractor)

TO	FROM	CONTRACT NO	CHECK ONE
JAMES MAC MORRAN U.S. ARMY CORPS OF ENGINEERS 111 DUNDEE ROAD, SUITE 1105 NORTHBROOK, ILLINOIS 60329	LARRY HOFFMAN OHM REMEDIATION SERVICES INC. 16406 U.S. ROUTE 224 E P.O. BOX 551 FINDLAY, OHIO 45840	DACW45-89-D-0506 DO # 0017	[X] THIS IS A NEW TRANSMITTAL [ ] THIS IS A RESUBMITTAL OF TRANSMITTAL # _____

ITEM NO (a)	DESCRIPTION OF ITEM SUBMITTED (Type, size, model number, etc.) (b)	MFR OR CONTR CAT. CARD OR DRAWING NO. (See instruction no. 8) (c)	NO OF COPIES (d)	CONTRACT REFERENCE DOCUMENT: SPEC PARA NO (e)	CONTRACT REFERENCE DOCUMENT: DRAWING SHEET NO (f)	FOR CONTRACTOR USE CODE (g)	VARIATION (See instruction no. 6) (h)	FOR GOVT USE CODE (i)
1	HAZARDOUS SOIL WORK PLAN, SSHP, CDAP (DRAFT)		2		C			C
	GAVE TOM SEEN 1 COPY @ 1145 HRS. ON 20 MAR 95							

REMARKS: THESE WORK PLANS, SSHP, CDAP ARE REVISED AND APPROVED FOR HAZARDOUS SOIL WORK FROM FORMER RAPID RESPONSE CONTRACT D.O. #58. UPON YOUR APPROVAL, WE WILL ISSUE FINAL PLANS AFTER RECEIPT OF YOUR COMMENTS.

'APPROVED, EXCEPT AS NOTED, Resubmission Required. See Attached Comments

I certify that the above submitted items have been reviewed by me and are correct and in strict conformance with the contract drawings and specifications except as otherwise stated.

LARRY HOFFMAN
PROJECT MANAGER-OHM

Larry Hoffman
NAME AND SIGNATURE OF CONTRACTOR

SECTION II - APPROVAL ACTION

ENCLOSURES RETURNED (List by Item No.)

NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY

DICK L. ALBERT
Authorized Representative of The Contracting Officer

Dick L Albert

DATE: 4 May 95

ENG FORM 4025, Aug 80 | EP 415-1-101 | EDITION OF OCT 84 IS OBSOLETE | SHEET | OF | (Prescribed by CEHQ)

Transmittal No. 0004
Contract No. DACW45-89-D-0506
Delivery Order No. 0017
Draft Amended Work Plan for Hazardous Soil, SSHP (Site Safety and Health Plan) and CDAP (Chemical Data Acquisition Plan) dated March 16, 1995.

Transmittal No. 0004 is approved except as noted, resubmission is required. The Contractor shall address the following review comments:

1. The transmittal number should be 0004, with the resubmission number being 0004A for the Final Work Plan for hazardous soils.

2. On page 2-3 of the Scope of Work, in paragraph 2.3 entitled MOBILIZATION/DEMOBILIZATION, the contractor states that most personnel and equipment will be mobilized from their St. Louis, MO Division. In discussions with our on-site representative, it was found that this is not the case and that approximately fifty percent of your personnel are local. Per the Contractor's plan, every effort shall be made to ensure that local personnel replace personnel on Per-Diem.

3. On page 2-4 of the Scope of Work in Figure 2.1, delete the last sentence of the first paragraph, since the amount of contaminated soil cannot be estimated for the entire project.

4. The fourth and fifth paragraphs of this same Figure 2.1 states that soil delivered to the staging area shall be stockpiled, tested and stabilized by others and that the Prime Contractor will perform the perimeter air monitoring. In discussions with our on-site representative, it appears that the Prime Contractor will also stockpile, test and stabilize the soil. Please revise your Scope of Work accordingly.

5. On page 2-15, para. 2.9, under the heading of TRANSPORTATION AND DISPOSAL, remove the sentence "Shipment of non-hazardous waste will take approximately three weeks, depending upon the accepted landfill schedule." No estimated time frame is necessary since it is unknown.

6. Upon resubmission of this transmittal please provide any and all documentation you have from the Omaha District that approves your company's CDAP, SSHP, Pug Milling operations, and the Pad Design.

FACSIMILE
COVER SHEET

JOB #16473
OHM Remediation Services, Corp.
370 Old Rock Road
Granite City, Illinois 62040
Fax # (618) 876-8553

OHM PHONE NUMBERS:

Larry Hoffman	(618) 876-8652
Tom Seem	(618) 876-8406
Lee Gayer	(618) 876-8329
Greg Koch	(618) 876-9025
Main Number	(618) 876-9175

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TO: JIM MACMORRAN

LOCATION: A.O.

****

FROM: T. BLOODWORTH

LOCATION: G.C.

****

COMMENTS: Jim / THE CONTRACTOR'S AMENDED DRAFT WORK PLAN COMMENTS.

TB